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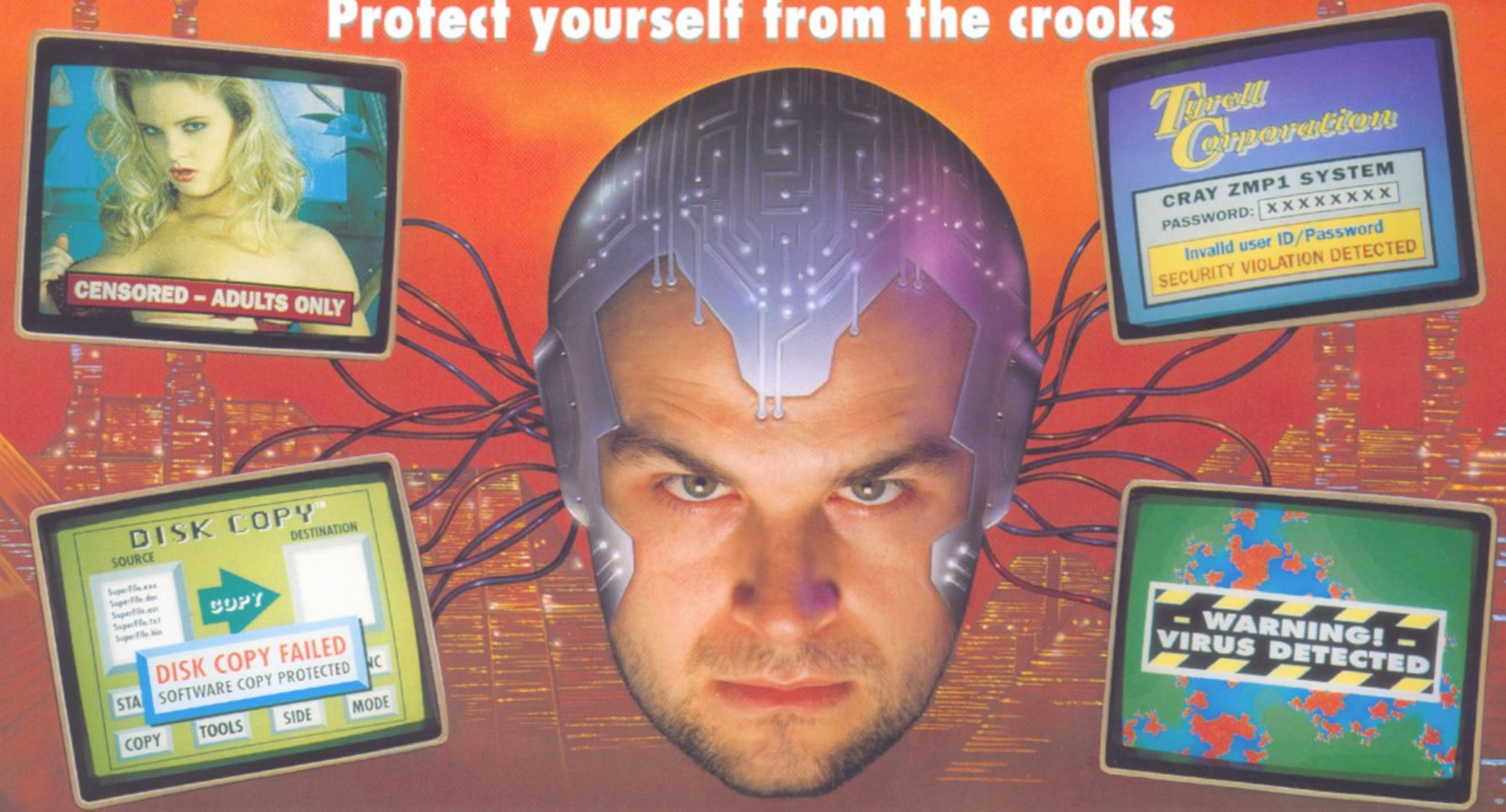
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ISSUE 29 ● SEPTEMBER 1993 ● £1.95

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Hi,
It seems that every month I'm able to report some exciting news from Commodore. This month is n exception but probably the most exciting to date.. **A1200 PRICE CRASH!!!** That's right Commodore have announced that the **RRP** of the **A1200 is now £299.99**. At this price there cannot be a better computer anywhere based on a Power to the Pound ratio. Armed with this news, Indi have got some pretty exciting A1200 offers, just take a look in the following Indi pages!!
Do you like the new Indi Logo?
I'm told that a certain person in the Indi Marketin Team has made it clear that when it comes to the **Amiga 4000/030** he is the *main man.*
So equipped with an **Opalvision 24 - bit graphic card** he was set loose.
The image was converted to an IBM compatible file using Art Department Professional, ported over to a **1.4 gigabyte graphics PC Workstation** then using the A4000 workbench file transferred and finally slotted into the Indi Advert.
I'm sure that you will agree that the end product is superb and a real demonstration of the Amigas Graphic Capabilities. Still on the subject of the Amiga the winner of this months 'Hints and Tips' competition is Peter Shelley of Stafford. Peter shows how you can save memory when using you Amiga.
Edit the startup sequence which can be found in the workbench partition in the ***'S'*** *directory. Delet the last line of the sequence: "END CLI". This wi enable you to quit workbench (once loaded) and drop into shell (Amiga DOS) saving over* ***100 K*** *that would normally be taken up by the multi task-ing windows environment. All commands are still resident including* ***DIR, DELETE*** *etc... Of course I can only recommend this for those users who wish to work outside the Amigas graphical envi-ronment and who are conversant with the Amigas command line interface.*
Thankyou Peter, your prize is on its way, many thanks to all those who have written to me, keep those letters coming.
Buying a printer to go alongside your Amiga is a big decision and one that every serious Amiga owner has to face.
Everyone knows that Indi fully researched the printer market before choosing Panasonic printers and believe that Panasonic Quiet Printers are the best on the market, but they would say that wouldn't they!
Now I'm told that Romtec the computer Industry analysts have announced that the **Panasonic KX-P 2123 has become the UK's top selling colour matrix printer.** Well done Panasonic (and Indi) Indi have just sent me details of their new **Multi Media Club**, it's a very interesting idea offering a home entertainment products under one roof not just computer games. It's well worth a look.
Kind Regards,

Jakki Brambles

Apologies from Indi that we ran out of signed Jakki Brambles photographs. Jakki has now signe more copies and they are on their way.

DMA ENSURES HIGHEST PRACTICE

As with most industries, the UK's personal computer industry has its share of cowboys operating in the mail order sector and at the receiving end a line up of despairing consumers who have suffered at their hands.
A personal computer is a sophisticated and expensive item and provided the purchaser is dealing with a reputable and accredited supplier, buying a computer by mail order can be a perfectly safe and cost effective exercise. The Direct Marketing Association (DMA) was set up in April 92 to set and maintain high standards for the sake of the industry and society at large, and to ensure that we can continue to regulate our own activities on the basis of proper professional responsibility.
Membership of the DMA is not conferred lightly - it is a privilege which entails responsibilities, to the consumer as well as to the industry. The foundation for this must be good practice. DMA members are required to abide by the highest standards as laid down in the DMA's code, enforced on members by The Authority of the DMA a separate body with an independent Chairman, and which is an assurance of vigorous self - regulation and professional responsibility.
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Since the symbol was introduced last June, it has become synonymous with quality , professionalism and and responsibility. While it cannot be shown in any way which will become a sign of best industry practice and of strict adherence to DMA codes of conduct. The symbol represents authority for members and reassurance for consumers. It has been a high valued mark of confidence signifying to the consumer the truly professional edge of the industry.

Alison Slan

Alison Slan
(Director of Public Relations,DMA)

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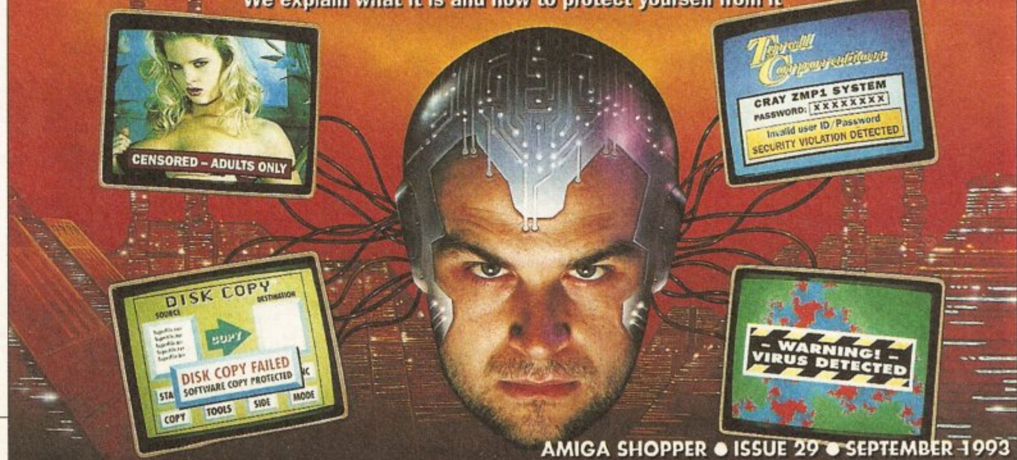
STOP PRESS
Amiga 32 -bit CD arrives August Call **(0543) 419 999** for details.

INDI LAUNCH NEW MULTI MEDIA CLUB

Last month saw the launch of the **Indi Multi Media Club** and what a response there has been.Early indications show that without a doubt it is destined to be the largest of it's kind. Apart from all the obvious club benefits the Indi operation offers a true 'One Stop Shop' for all members.On offer each month with an ever increasing product range, members can obtain software to cover every application, including **Morphing Rendering Ray Tracing and Video.** There's a vast range of accessories and peripherals again encompassing members every need and a PD Library second to none.
The Club also offers a very comprehensive range of videos including the **Cult Manga Titles, Music Features and Special Interest.** There really is something to suit everyones taste.
For those members with **CD ROM** players (including **CDTV, PC and SEGA**) there's plenty on offer. Not only does the 'Club' cover CD ROM titles, there are also some great audio titles available.
With so much happening on the **Multi Media** scene it's hardly surprising that Indi are there to provide a competitive single source of product supply.
Membership costs only £10 and each member receives a quality gift on joining , even though there is absolutely no commitment to purchase at any time. If you would like to be a part of this exciting club then call **Indi** on **0543 419 999.**

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ISSUE 29 • SEPTEMBER 1993

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COMMENT



The editor, Cliff Ramshaw, asks about the consequences...

So does the CD32 mean that Commodore are forsaking serious users?

"We certainly intend to keep the A1200 in its current form for some time to come," said Commodore UK general manager David Pleasance. The next top-end product won't be launched for another 12 months, but it's scheduled to be a combination of Amiga and RISC technology. It will use the as-yet-unavailable AAA chip set (said to offer a ten-fold improvement over AGA), and will be fully compatible with the soon-to-be-launched Microsoft Windows-NT and Pentium, the processor from Intel that is to take over where the 486 left off. Commodore claim their machine will operate five times faster than a 586-based PC for a similar price. So it's not all consoles from now on, thank God.

COMMODORE PRICE SHUFFLES

Commodore have revised the prices for most of their Amiga range.

The price of the top-of-the range A4000 040 (with 120Mb hard disk) has been reduced by £367.32; it is now available for just £2,099 including VAT.

The price of an A1200 has been dropped by £100 to £299, making it an extremely cost-effective computer.

One the down side, the A4000 030 has undergone an effective price increase. Although the prices of the two configurations remain the same (£1,099 for a 120Mb hard disk system and £999 for a 80Mb system), their specifications have been reduced. Both are now being sold with 2Mb of Chip RAM rather than the proposed 2Mb of Chip RAM and 2Mb of Fast RAM.

Commodore ☎ 0628 770088.

New machine means make or break for Commodore

Can Commodore's high-spec £300 console-beater lure fans away from Sega? We take a close look.

The Amiga CD32 has arrived. It was spectacularly launched amid flashing lights and clouds of dry ice at the National Science Museum, London, and is due to ship in the first week of September for the incredible price of £299.99.

The sheer scale of the launch demonstrates the importance of the new machine to Commodore. The media circus was fronted by Chris Evans from *The Big Breakfast;* the machine is backed by companies such as Universal Pictures and McDonald's, and Radio 1's Bruno Brookes reckons it will be the most important thing to hit the music industry this decade. We haven't seen anything like this since the launch of the Amiga itself.

CD32's technical specification is certainly impressive; it makes everything else currently available, including Sega's MegaCD, look primitive. As first reported in *Amiga Shopper* 26, it's a CD-based console with an A1200 at its heart. It uses the same processor, a 68EC020 clocked at 14MHz, and the same AGA graphics display chips as the A1200. This means it can display up to 256,000 different colours on screen at once, from a palette of 16 million. In practice, though, most games are likely to use 256-colour displays. There's a generous 2Mb of RAM on-board, and the highly-advanced Workbench 3.1 in ROM.

The CD is a top-loading device, dispensing with the much-criticised caddy system employed by CDTV. It is a dual-speed drive, offering data transfer rates of 150K per second and 300K per second. CDs can hold up to 600Mb of data – that's nearly 700 floppy-disks-worth.

A port on the machine will accept a user-installable Full Motion Video module. This module, promised for the end of September at a price of £199, will enable film footage to be taken from a CD and displayed directly on a television connected to CD32. One "MPeg" module will give up to 74 minutes of video, and the quality is claimed to be better than that from VHS videotape. David Pleasance, Commodore UK's general manager, sales and marketing, expects this to be one of the key areas for the machine. As well as showing feature films, Amiga CD32 will be ideal for playing video albums – compact discs with music and accompanying video footage.

But the machine's initial impact will be in the games market – and it should make quite a splash, with publishers such as Ocean, Mindscape, Gremlin Graphics, Flair Software, Grandslam, International Computer Entertainment, Thalion, 21st Century Entertainment and Millennium all pledging their support. Two games are to be bundled with the machine, but which titles they are will not be decided until just before the machine is shipped. Commodore promise that 15 titles will be available in time for the CD32's launch and 75 by Christmas.

The average price for CD games is expected to be £29.99, part of which goes to Commodore as a royalty payment. Commodore gave two justifications for this: the machine's format gives publishers the benefit that all but commercial piracy is futile, and Commodore need the money. The scheme is not unprecedented: both Sega and Nintendo demand royalty payments, believed to be much higher than this, on software sold for their systems.



The Amiga CD32 has the power to succeed and take the world by storm, as the original Amiga once did.

With Commodore in a very delicate financial state (see last issue's news pages for details), Amiga CD32 is very important to the company's future. How the machine is marketed may be critical. As David Pleasance said, "Over the years Commodore has employed some tremendous sales prevention officers." The machine will be advertised, but Commodore admit they are in no position to compete in an advertising battle with the likes of Sega. Still, with a tightly-focussed, pan-European campaign they hope to sell between 200,000 and 250,000 CD32s in the UK, with 400,000 to 500,000 in total throughout Europe.

Amiga CD32 may look remarkably like a Sega MegaCD, but there's no question that it is way ahead in both price (it costs £100 less) and technical specification. It even supports a GUI (Graphical User Interface), so you can control a whole system from your games paddle. What's more, it is not limited to its two built-in ports – each can support up to eight paddles, and Commodore are talking excitedly about the potential for "community games".

Another feather in CD32's cap is its ability to be turned into a full-fledged computer, an A1200-plus-CD-ROM, by means of a "docking station" which is promised in time for Christmas at a price in the £200 to £250 region.

More serious competition, perhaps, comes from 3DO, another CD-based system which, technically speaking, knocks the spots off everything else, including CD32. 3DO is due for an American launch in October, at a price of $700 (that's around £450). Commodore insist that, at that kind of price, 3DO is appealing to a different audience. The truth is, though, that it's bound to attract away the wealthier enthusiast who buys the latest in technology as soon as it becomes available – the sort of person who bought the first Amiga and probably a CD-i or CDTV. This shouldn't prevent the CD32 having good sales, though, *if* Commodore can get their marketing right.

So, if Amiga CD32 is successful, what does it mean for the non-game-playing Amiga community? Well, Commodore have stated that they are to concentrate on 32-bit technology as a minimum standard, looking at 64-bit in the months and years ahead. They have also publicly announced their commitment to bringing CD technology to their current machines. They told *Amiga Shopper* that a CD drive, with Full Motion Video, for the A1200 may be here before Christmas.

For now, though, it's a safe bet that any future plans depend largely on CD32's immediate success. AS

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AMIGA A1200

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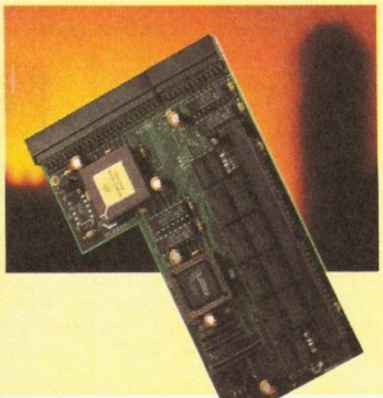
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OMBO VIDI AMIGA 24(RT). For the more serious user, this - bit version will again capture from from any video source with true oto realistic images! A staggering 16.7 million colours can be utilised th incredible results. Full AGA chipset support.

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Entry level Genlock for all Amigas. Record stunning Amiga Graphics into standard video or overlay text and graphics onto a video signal.

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" Quality: 9 out of10. " Exceptional value for money. AMIGA COMPUTING JAN 93

MONITOR



1084ST MONITOR.
Commodores original and best selling colour stereo monitor. Now includes swivel and tilt stand for total ease of use.

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Third Party OpalVision Software

(Available now or coming soon)

addin 4D, Amilink Video Editing Products, Art Department rofessional, Caligari 24, Cine Morph, Fractal Pro, Image FX, nagemaster, Imagine, Michtron Entertainment Products Morph us, Real 3D, Scala Multi media 200, Texture City Image braries, 3D Professional, Transporter, Tv Paint, Vista Pro, Video sions and more!!!

The NEW OPAL VISION system (Rev.2)

The amazing Opalvision 24 - bit graphics board and software suite has been updated and is now even better value for money.

The software suite now includes:

Opal Paint V2.0 - Now includes full magic wand implementation and Alpha Channel that allows photo compositing with selectable levels on a pixel by pixel basis. The new Chrominance effect allows absolute, real time control of image contrast, brilliance and re - mapping of colours.

Opal AnimMATE V2.0 - ofering real time play back of animations created by ray tracers, landscape generators, morphers and all other 24 - Bit software.

Opal Hotkey V2.0 - Display OpalVision graphics anytime with key combinations.

Opal Presents - Comprehensive, icon - driven presentation package.

Special Limited off er
IMAGINE V2.0 for only **£59.99** when purchased with OPALVISION
Imagine 3D is the most popular 3D rendering software, that now supports OpalVision. This is a full version that would cost £300 if purchaed separately.

"Quite simply, it's a spectacular product" *- Amiga Computing*

"Undoubtedly the finest, most professional paint program to arrive on the Amiga" *- Amiga Format*

"Professional quality at this Price can't be turned away" *- Amiga User International*

"The verdict was unanimous - brilliant" *- Amiga Shopper*

INDI PRICE £599.99

OpalVision NEWS FLASH

At Last - OpalVision Upgrade Modules!

OpalVision Video Processor - Plugs into the OpalVision mainboard and adds a waelth of additional features * 24 Bit real - time frame grabber from composite or S - Video. * Professional quality genlocking *VLSI microcode processor "Roaster Cip" for Digital Video Effects. *Luninance & Chroma Keying * 256 - level "Alpha Channel" (transparency) key. Management Software
Full specification available on request

OpalVision Video Suite - An advanced external rack mounted video and audio switching device with it's own internal computer. Includes 9 video and 10 audio inputs, 24 - Bit frame store and a host of special effects triggered manually or automatically. Full specification available on request

OpalVision Scan - Rate Convertor - For 31 Khz non - interlaced output of Amiga graphics, OpalVision images and any Pal or NTSC source. Time Base Correction adds to the list of professional features of a unit that simply plugs into the OpalVisionmain board. Full specification available on request

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Complete Amiga 4000 / OpalVision systems are available for a range of applications
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12 MONTHS INTEREST FREE CREDIT AVAILABLE ON CDTV EXTERNAL HARD DISK SUBJECT TO STATUS. LOW INTEREST CREDIT AVAILABLE ON ALL ORDERS OVER £200

MIGA CDTV THE MULTIMEDIA COMPUTER TOTAL HOME ENTERTAINMENT SYSTEM



MONITOR NOT INCLUDED



The problem with any new product is that it always takes time for everyone to realise its full potential.
CDTV is no exception and in our opinion everything we have read does a pretty poor job of explaining just what CDTV can do and why it is so exciting.

THE INDI GUIDE TO CDTV

IT'S A CDTV PLAYER - Yes, it will play all your Primal Scream, Paverotti, Pink Floyd and any other CD you care to mention in superb high quality stereo, with infra red remote control.
IT' AN AMIGA - Plug in the keyboard, switch on the external disk drive and the colossal range of inexpensive Amiga Software can be used on CDTV.

T'S A MULTIMEDIA SYSTEM - Just imagine, stereo sound, images and text all on screen. It asks a question, you respond, it responds - truly intertive! Each CD disk holds hundreds of megabytes of data with instant optical access. The whole of Hutchinsons encyclopeadia fits on to one disk. This intertive system is a unique aid for Education, Business or Leisure. The future is here!

ACK CONTENTS AS STANDARD * Amiga CDTV Player * CDTV Keyboard * CDTV 1411 3.5" Disk Drive * CDTV Infra Red Remote ontroller * CDTV Wired Mouse * CDTV Welcome Disk * Manuals * Fred Fish CDTV Disk

NDI VALUE ADDED FREE * Lemmings CDTV (£34.99) Blues Brothers (£12.99) * Pipemania, Populous, Kickoff 2, Space Ace.

INDI PRICE

PRICE CRASH ~~£399.99~~

PACK AS SHOWN **£329.99**

MULTI MEDIA PACK WITHOUT INDI VALUE ADDED **£299.99**

CDTV CONNECTS DIRECTLY TO YOUR TV SET

DESPATCH

All orders received by 6pm Monday to Friday are despatched sameday for delivery using our national courier - Securicor. (UK Mainland only) Saturday deliveries are available at a small surcharge. If you are out when we deliver, a card will be left at your home giving you a contact telephone number to arrange a convenient re deliv ery.
Delivery queries can be resolved immediately using our on - line computer.
Cheque orders are despatched immediately on cheque clearance, usually 10 working days from receipt. A delivery charge of £5.00 is made per item unless otherwise stated.
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AMIGA CDTV ACCESSORIES



THE BRICK - ETTE
Just plug in the brick - ette and use any wired Amiga compatible joystick, mouse of trackball device on the Commodore CDTCV. The built - in 8 - bit Micro Processor gives the Brick - ette big smarts in a tiny package and makes it easy to use just plug into the remote port and it is ready to go with real time mouse or joystick movement on your DTV. No loading of driver programs or software. No witches for mouse or joystick. Special settings (with ouse) allow you to blast away with with three rapid re modes & dual fire buttons. Comes complete with ython Micro switched joystick.
NDI EXCLUSIVE £49.99
Vith two joysticks **£59.99**



BLACK 1048S MONITOR
At last the CDTV Monitor you have been waiting for. The original and best selling colour/ stereo monitor from Commodore is now available in black to complement your CDTV
INDI PRICE £189.99
(or £179.99 when purchased with CDTV Multi Media pack



If you are thinking of buying CDTV or already own one you'll be pleased to know that INDI stock all CDTV accessories and software that are available from manufactures. We believe in CDTV and we therefore continue to support this exciting product. You will always have a source of product for your CDTV from INDI.

L to R

CDTV Encore SCSI Controller + Internal Mount	£109.99
CDTV Internal Genlock	£149.99
Black 1084S Colour Stereo Monitor	£189.99
(When purchased with CDTV Multi - Media Pack)	£179.99
CDTV Remote Mouse	£49.99
Scart TV / Monitor Lead (inc Stereo Phono Lead)	£14.99
Megachip - 1Mb Upgrade Chip RAM Upgrade for CDTV	£159.99
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You've got the CDTV, you've got the keyboard and the floppy disk drive - for a total computer solution all that's needed is an ultra fast hard disk drive.
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AMIGA CDTV SOFTWARE

SEE THE JAKKI BRAMBLES PAGE FOR DETAILS OF THE INDI SOFTWARE CLUB

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Further emulation sensations

Utilities Unlimited, makers of the Emplant Mac emulator reviewed last issue, have announced that they hope to have an additional IBM PC emulator module ready by mid-September and priced at less than £100.

The addition will come in the form of a custom chip to be fitted to the board and a new software module. Once upgraded, the Emplant board will enable the Amiga to multi-task alongside the Mac and the PC emulations. The speed of the PC emulation will depend on the processor fitted to your Amiga: a 68030 will give 386 performance, while a 68040 will give 486 performance. A custom screen driver will enable Amigas with the AGA chipset or appropriate graphics board to display up to SVGA PC screen modes. The projected price is £99.95.

Also planned by Utilities Unlimited is a software update for the existing version of Emplant that will cure the file transfer problems outlined in last month's review. Once it has been added, icons for all files, whether Amiga, PC or Mac, will appear on all emulated Desktops. Software updates are free to owners of Emplant.

A PCMCIA version of Emplant is also planned for release in September. It will work with the A1200 and A600, and provide a throughport for the addition of further peripherals. The projected price is £299.95.

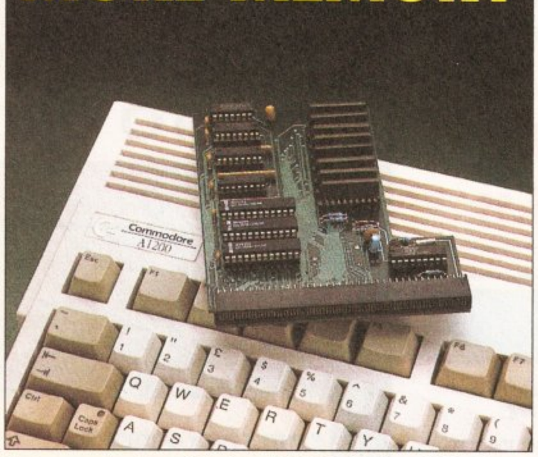
• The UK distributors of Emplant, Blittersoft (☎ 0908 220196), also supply high-density floppy drives (external version £124.95, internal £104.95) offering 1.78Mb of storage to Amigas with Workbench 2.04 or higher.

A prize for Sally

Sally Systems' aid to dyslexic children *Dyspell* has received the Communications Award from the Institute for Social Inventions, and it now costs over 40% less.

Dyspell assists children with eye to hand coordination and correct eye movement in an effort to help them spell and read. The price of the Amiga version has been reduced from £411 to £235. A two-disk demonstration is now available from Sally Systems ☎ 0628 24626.

MORE MEMORY



An expansion board for the A1200 offering 4Mb of memory has been launched by Siren Software.

The Turbotech A41200 fits into the A1200's trapdoor expansion slot (so fitting it won't invalidate your warranty) and adds 4Mb of 32-bit zero-wait-state Fast RAM, as well as a battery-backed real-time clock.

The board will sell for £249.99, but is being offered for a limited period for the introductory price of £169.99. Siren Software ☎ 061 724 7572.

SuperBase revamped

American company Oxxi have announced the imminent release of new versions of their leading databases *Superbase Personal* and *Superbase Professional.*

Both packages are now at version 1.3, and have been renamed *SBase Personal* and *SBase Professional.* Among their new features are: support for the AGA chipset, AmigaDOS 3 compatibility, a re-index facility to recreate indices for scrambled data, playing of ANIM files from the Professional version, the ability to use EPS clip art, and CompuGraphic font support.

Version 1.3 of both programs will handle files created with earlier versions. *SBase Personal* v1.3 costs $US149.95 and *SBase Professional* v1.3 is $US299.95. UK prices have yet to be finalised.

Oxxi ☎ 0101 310 427 1227.

Displays of strength from Commodore



Commodore have launched two monitors designed to work with all Amiga screen modes.

The first, the 1942, is a replacement for the old 1960 monitor. It is a quadsync with built-in stereo speakers. Its dot pitch is 0.28, and it costs £399.99. The other new model, the 1940, is cheaper at £299.99, has a dot pitch of 0.39, and also comes with stereo speakers.

Commodore ☎ 0628 770088.

Cartridge copiers caught

The Federation Against Software Theft, in conjunction with the Greater Manchester Police, have seized a number of cartridge copying devices and over a thousand illegally-copied games after a raid on a shop in Manchester's Exchange Centre.

The raid followed the issuing of search warrants under the Copyright Act. It was jointly funded by ELSPA (the European Software Publishers Association), Sega and Nintendo. Both genuine and pirated cartridges were unearthed, as well as games copied to floppy disk with the aid of copying devices believed to be sourced from the Far East.

It has been announced that legal proceedings against alleged dealers in stolen or copied software are to be prosecuted privately, rather than by the Crown Prosecution Service, which previously has independently decided whether or not to follow up raids with legal action. The case against the Manchester copiers is expected to be one of the first to be privately prosecuted.

Said Roger Bennet of ELSPA: "The raid in Manchester was an unqualified success and we will now set about ensuring that the appropriate punishment is delivered through the courts. We have been aware of the threat of cartridge copying for some time and have remained on top of the situation.

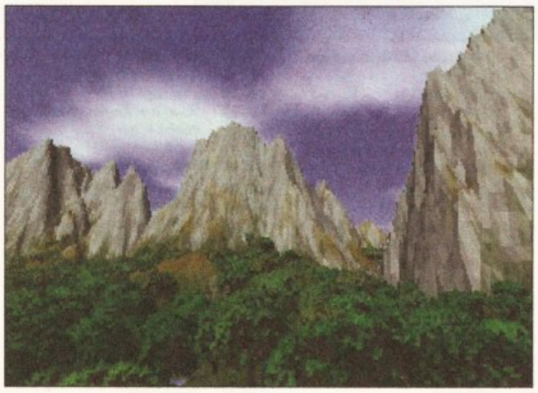
"This may have been the first raid against the cartridge thieves but I am sure it will not be the last. This is a problem we are determined to nip in the bud. I also think that the whole issue of legality in cartridge-to-disk copying devices is now very much in the spotlight."

FAST ☎ 0628 660377. Special report on computer crime: page 14.

ART DEPT IN SAFE HANDS

ASDG's product range, including *Art Department Professional,* is now to be distributed by Meridian following the collapse of previous distributor Direct Marketing International.

ASDG have promised, via Meridian, to fulfil all the paid-for orders given to DMI. Meridian have so far had 100 such orders to deal with, and have contacted a further 400 customers whose credit card orders and cheques had not been processed by DMI before it closed. Meridian will also be handling upgrade deals for existing owners of *Art Department.*



***VistaPro 3* is still available, despite the demise of DMI (as reported in *Amiga Shopper* last month).**

Other products previously distributed by DMI and now in the hands of Meridian include: *Vista Pro 3* (£69.95), *Makepath* and *Terraform* (£34.95 each) and *Distant Suns* (at a new price of £64.95).

Meridian ☎ 081 543 3500.

Solution to network problems

UK company Hydra Systems have undertaken to sell Oxxi's ACS networking software.

An Amiga running *Amiga Client Software* and fitted with an Ethernet card (£295, also from Hydra) can be linked to other machines via a Novell Network (the dominant network operating system in the professional world). Any computers on the network can share resources such as printers and data. Oxxi's software supports high-capacity file servers with password protection, fault tolerance and multi-user database operations.

A single-user ACS licence costs £176.25, and a five-user licence costs £411.25 from Hydra Systems ☎ 0203 471111.

MultiMedia 93

Moved from last year's bustling Olympia venue, this year's MultiMedia show, MM93, proved to be a far smaller, much less interesting show covering only a fraction of the floor space.

Many of last year's exhibitors – including Philips, AutoDesk, Commodore and SCALA – were conspicuous by their absence. Maybe this is just a reflection of the continuing economics of recession, or perhaps multimedia still isn't the white-heat saviour of the computing and communications industries that some commentators would have us believe.

While there were PCs and Macs in relative abundance, I was hard pressed to find any Amiga presence at all. Only VideoPilot and Syntronix were in the least bit representative of this magazine's favourite multimedia machine – the one that made accessible desktop video a reality – that's the good old Amiga, of course. But an Amiga 1200 here and there is hardly going to impress the corporate men in suits whose job it is to buy hardware.

The strong lead that the Amiga once had over PC and Apple products is slowly but surely being whittled away. Video applications are getting better and better on PCs (though some still have a way to go to reach *Scala* standards) but the wide user base means quality products at lower prices.

Appreciative crowds saw impressive demonstrations of video digitisers, broadcast-quality full-motion grabbing and playback technology, video edit controllers, 24-bit animation and modelling packages, 16-bit sound cards and plenty more. Now, all of these things either exist (or have been announced) as Amiga products, but some have been coming for years – and they still haven't made it onto the streets.

The difference here is that almost everything on display at MM93 is available, now. Okay, the quality may be no better than is currently possible on a top-end Amiga, but you *can* buy it.

And why was there no Commodore presence to offset the PC's and Mac's unopposed monopoly of the show? Surely they haven't finally given up trying to sell Amigas as "serious" machines? Let's hope not.

Report by Gary Whiteley

It's showtime again

Future Publishing, the people behind *Amiga Shopper, Amiga Format* and many other market-leading computer and games console magazines, are paying a visit to London to put on another superb Future Entertainment Show.

The second Future Entertainment Show

The show will be taking place at London's Olympia between Thursday 11 November and Sunday 14 November. Saturday and Sunday opening times are 9–5, Friday 10–5 and Thursday 10–8.

The later Thursday opening is to accommodate *GamesMaster*, the Channel 4 computer games programme, which, in a piece of broadcasting history, will be the first TV programme to be broadcast live in its entirety from a computer show.

As at last year's highly successful show, you'll be able to see and play all the latest games releases, take part in competitions and listen to seminars to improve your computing knowledge. But this year's show is going to be bigger, and it's going to be better. We'll bring you all the details as they are finalised.

Tickets are on sale now for £6.95, or £24.95 for a family group of four (with at least one adult in the group). Call the ticket hotline on ☎ 051 356 5085. Beware: you won't be able to buy tickets on the day: entry is by advance ticket sales only.

Big big RAM for A1200

Got an A1200? Looking for just a little bit more to beef up your system's capacities? If the answer to both these questions is yes, you will be pleased to learn that Golden Image are launching a 9Mb RAM board for the machine.

The "plug-in and go" board comes with a battery-backed-up real time clock and 1Mb of 32-bit memory. It can be further expanded to either 4Mb or 9Mb. Space is also provided on the board for a maths co-processor. This can be clocked at higher speeds than the A1200's 14MHz, but such a configuration requires the addition of an oscillator (supplied by Golden Image if the board is bought with a maths co-processor).

The basic board, with a clock and 1Mb of RAM, costs £115. The fully-configured board, with a clock, 9Mb RAM and a 68882 maths co-processor clocked at 33MHz, costs £439. Golden Image ☎ 081 365 1102.

Readable faces

Power Computing have released Optical Character Recognition (OCR) software which can be used with both their own scanners and those from other companies.

OCR software enables the Amiga to convert scans of text into ASCII (plain text files), which can then be imported into a word processor or desktop publishing package for further editing, as if the text had been keyed in. Power's package makes use of mathematical character definitions for faster and more accurate recognition. It is pre-trained to recognise more than 20 typefaces, including Courier, Helvetica and Letter Gothic. The software can also be made to learn further typefaces.

Text can be recognised in variety of sizes ranging from 10 to 18 point. Both proportional and monspaced fonts are applicable, so it can read both typeset and typewritten text. The program uses context-sensitive lexicons to help it make intelligent decisions about any defaced or questionable characters and words that it reads.

Power OCR costs £49 from Power Computing ☎ 0234 843388.

PAL FOR YOUR CITIZEN

Buy a Citizen Swift 240C printer between now and 30 September and you'll get a free word processor into the bargain.



The Citizen Swift 240C promises not only 24-pin colour output but also a free copy of the leading Pen Pal WP.

Citizen are giving away a copy of *Pen Pal* (worth £58.69) with every Swift 20C sold during this period. All you have to do is fill in a claim form given when you buy a printer and send it along with proof of purchase to Citizen.

Pen Pal is a good beginner's WP, easy to use and easy to learn, with a very friendly user interface and an excellent manual. It comes complete with a built-in database facility and even some basic drawing tools.

The Swift 240C is a 24-pin colour dot matrix printer, launched a year ago. It has a speed of 66 characters per second in letter quality mode. Its recommended retail price is £418.83. Citizen ☎ 0753 584111.

Clocking on

Video professionals and enthusiasts will be pleased to learn of the release of *VTClock*, an Amiga-based "ident clock" program.

The clock's display consists of a 30 second analogue clock and a window containing up to seven lines of text. A "scratchpad" mode is also available, whereby the text window extends across the full screen width for use as a simple caption generator.

The program will generate a 1KHz tone between 25 and 25 seconds, as well as creating standard colour bars. The screen can be flashed at 10 seconds, and will go blank at a user-definable period between 9 and 0 seconds.

A simple text editor is included for editing the "ident" text. Any Amiga font may be used for the text display.



The video equivalent of the clapper board can be yours on your Amiga with the VT Clock program.

VT Clock costs £35.25 from Zen Computer Services ☎ 061 793 1931.

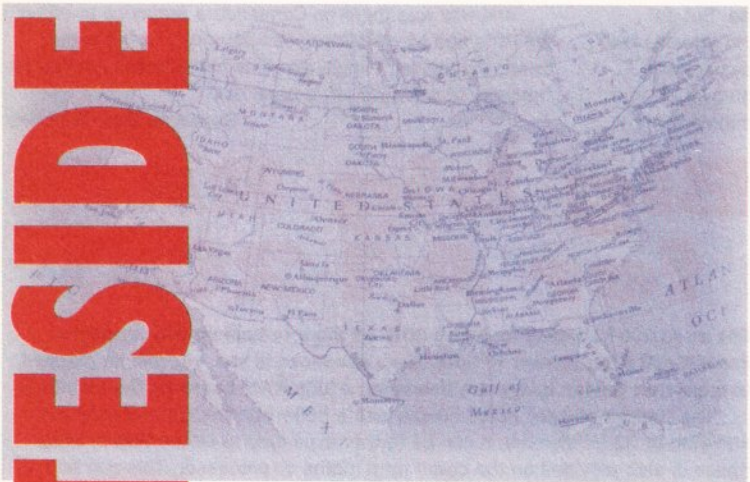
SUPRA SPEED UP

American peripheral manufacturers Supra are to enter the highly-competitive accelerator arena with SupraTurbo 28.

The product is a 68000 accelerator, which means it should be compatible with nearly all software written for the standard Amiga, but clocked at 28MHz, four times faster than normal. It will plug into the internal slot of an A1500 or A2000, or into the side expansion slot of the A500. The A500 version has a pass-through slot to enable you to add hard drives and other peripherals.

The SupraTurbo 28 costs £129.99 from Supra ☎ 0101 206 750 9600. It is distributed in the UK by First Computer Centre ☎ 0532 319057.

STATESIDE



Amiga Shopper's own American cowboy, Bob Liddil, reports on the latest Amiga news from all over the good ol' US of A. Yeehah.

My kind of town, St Louis, Missouri, is gateway to the western United States, features a gigantic arch at the edge of its downtown, and is well known for being partially submerged just now, thanks to a rampaging Mississippi River. But St Louis also has another persona, that of a testing ground for new and exciting versions of Virtuality, the Amiga-based "pay to play" virtual reality video game that has captured some hearts and many minds.

Here, we are most familiar with *Dactyl Nightmare* – which is not how Columbia Pictures felt about *Jurassic Park's* sinking of Columbia's *Last Action Hero. Dactyl Nightmare* is a wonderful 3D Amiga-based virtual reality prototype that was introduced to the American public in early '92, then seemed to promptly fade away. Well, I discovered that it didn't fade away at all. After making a brief Commodore-sponsored appearance at the Toronto World of Amiga show, Virtuality and *Dactyl Nightmare* settled down to a quiet life in shopping mall video arcades and high quality houses of amusement in larger cities from coast to coast – and particularly St Louis.

St Louis is also home city for the people who own Virtuality in the US, and two new games are in play-testing there right now. They came in both stand-up and sit-down versions at the arcade I visited. One was a first world war flying "Curse you, Red Baron" kind of affair, complete with grass landing field and feisty opponents. The other was a "Battle of the flying 'Bots" game that featured rocket launchers and an arena in which to fight.

I have to say that the reality is less impressive than the idea of commercial virtual reality. This was a heavily-traveled video arcade and the Liquid Crystal Displays inside the helmet were less than totally clear. True, I shot down several other robots, including the one operated by a famous science fiction writer who was escorting me for the day. It was fun, but it was also *fuzzy,* and for $4 a game I really expected crystal-clear graphics and chill-to-the-last-cell stereo sound. Neither materialized and the whole experience left me wondering if the Amiga had been employed to its fullest potential – or if, perhaps, there was some maintenance not being done.

It has been one of those kinds of summers in the US. The economy is so oppressive that even cowboys are unmotivated. Some have escaped the doldrums, though, and are actually marching right along.

• Dreamworks Video Productions are releasing *The Guide to Art Department Professional* volume 2. At $39.95, it offers information on *ADPro's* Toaster framestores, Anim creation and the Antique operator. It includes discussions on ARexx scripts, ARexx pseudo-loaders and ARexx pseudo-savers. There are sections on the new *FRED* batch handler and canned ARexx scripts and viewers are tutored on a variety of special effects. Dreamworks have included a transcript, so that you can follow along (in case you can't speak Yank that well), and just for fun they'll throw in some free surprise goodies about which I have not been given details except for the comment, "They'll love 'em". Contact Dreamworks, 5037 East Keresan, Phoenix, AZ 85044, or give 'em a call at 0101 (602) 893-3988

• For everyone who must toil ever upward in the quest for the ultimate font, Kara Fonts have added to their roster of images with the release of *PlaqueGrounds*, a new package of 104 24-bit textured plaques for use with 24-bit and AGA paint programs (Toaster compatible). These NTSC- and PAL-compatible background plaques are dimensionally rendered in eight different textures, four styles and various sizes which will add prominence to your titling and graphic projects. Sadly, I discovered, these fonts do not work with a branding iron on longhorns.

The eight textures are: Adobe, Granite, Sandstone, Copper Patina, Wood, Marble Pink Vein, and Brass-Brushed. The four styles are: Rectangle-Round, Rectangle Square, Rectangle Edged and Rectangle-Frame. The four sizes are 638 x 93 pixels, 638 x 125, 638 x 173 and 638 x 39.
PlaqueGrounds retails for $99.95 and is now shipping from Kara Computer Graphics, 2554 Lincoln Blvd., Suite 1010, Marina del Ray, CA, 90291. Or call 0101 (310) 578-9177

• The summer issue of *WordPerfect Report,* a newsletter dealing with the originally-PC-based word processor of that name, announced in a small article that telephone support for the program on the Amiga would be discontinued as of June 30, 1993. This isn't just another case of software companies deserting our format, however: also discontinued was support for users with Macs and Atari STs. Either *WordPerfect* is now totally perfect for these platforms, or yet another producer has jumped ship and plumped for the deeper waters of the PC market.

It's too sad. Here's your Amiga Cowboy, strapping on his six-shooters and preparing to do battle, defending the Amiga. I'm riding into the sunset now, with a melancholy "Yeehah". See you next month. AS

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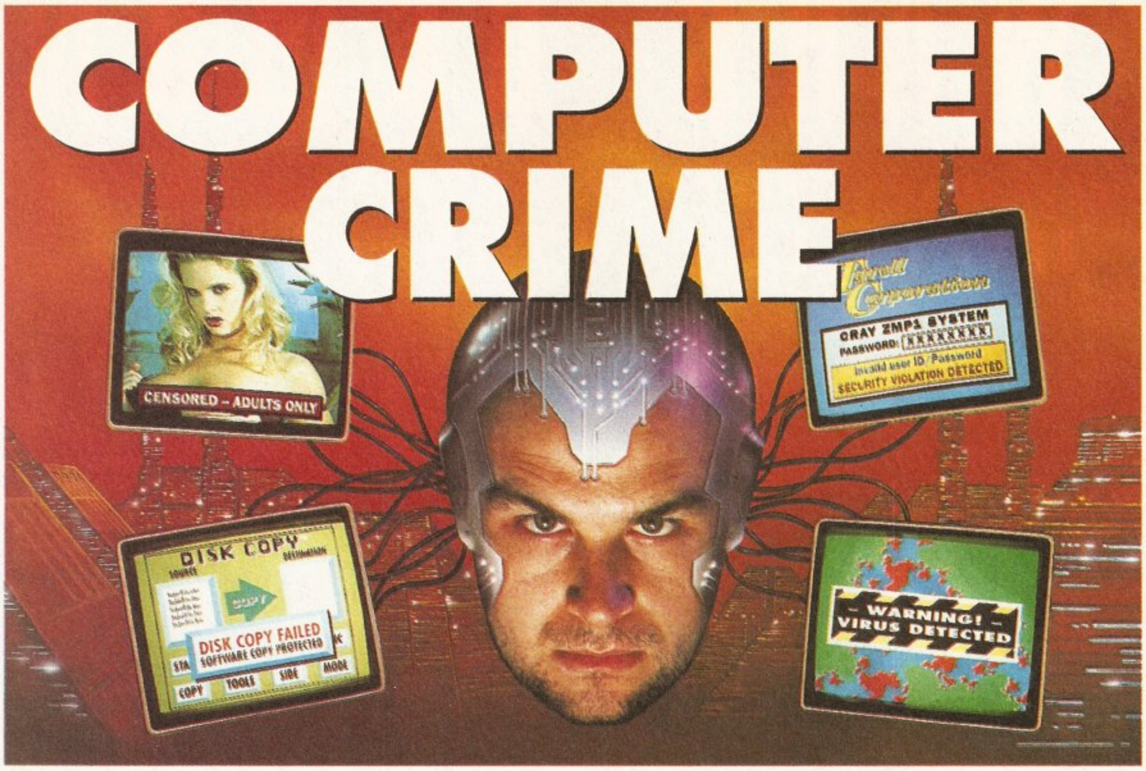
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COMPUTER CRIME



The Amiga can be a tool for crime as well as good. Dave Winder explains how to protect yourself.

As more and more aspects of life come to depend on computers in one way or another, so the potential damage that computer crime can do grows ever greater. All your data and every disk in your precious collection could be wiped by a virus. The spread of pirated software could damage the Amiga software market so badly that new programs just don't get developed for your machine. Children throughout the country could be depraved and corrupted by pornography that they can access through their Amigas. And a single hacker using just his Amiga and a cheap modem could bring this country's entire banking system grinding to a halt.

Unlikely? Well, yes – for the present. But as for the future, knowledge of how it's done can help protect you from it. So we are going to look at the four main areas of concern to most people – hacking, viruses, piracy, and pornography. As Nick Ross might say, the likelihood of you being subject to these crimes is minimal, so don't have nightmares... just read on.



HACKING

Hacking is, simply, unauthorised access into computer systems. It began in the days before the Amiga appeared, with phone "phreakers" who, in the late '60s to mid '70s, cheated the American telephone system. Most of them claimed they were not doing it for the free calls, however, but rather to prove they could do it, to show they were better than the system. Modern-day hackers often give much the same justification.

In the UK one of the most infamous hacks was perpetrated by Steve Gold and Robert Schifreen, and became known as the "Prestel Hack" or the "Prince Philip Hack". The pair managed to access Prestel, a large subscriber information service operated by British Telecom, at such a level that they could do

HACKER OF THE CENTURY

Robert Schifreen has been a successful computer journalist (including being editor of *.EXE* magazine) and currently runs a company called TTK Ltd, which specialises in contract publishing and security consultancy. However, he also had a brief "career" as one of the most publicised hackers there has been.

Amiga Shopper: *How did you get involved in hacking?*

Robert Schifreen: The interesting bits happened while I was working at *C&VG* magazine, where I went after leaving school to work as their resident technical expert. I discovered that Micron 800, part of Prestel and due to open in a few months' time, was based in the basement of the office. So I got to know the staff down there, and that was how I got interested in comms.

One night I was testing some software on a BBC Micro and stumbled across a Prestel test account with an ID of 2222222222 and a password of 1234. This gave me access to some phone numbers for Prestel's test computers. I dialled into these, and after some months of fruitless attempts I suddenly discovered that one of the programmers had left the System Manager ID and password on the log-in screen of the test computer. I typed it in. It worked!

As System Manager of the test computer, I was able to ask the system for users' passwords, including Prince Philip's. These passwords worked on the real system too, because of technical errors made by Prestel staff.



Robert Schifreen, the Prestel Hacker, reveals just how poor the security can be on major systems.

And that's how it all began, really. I was tracked down and arrested, and charged with forgery because there was no legislation that said you couldn't hack into people's computers for fun, so long as you did no damage. I was acquitted, after a three-year legal battle which cost the taxpayer around £2 million. I now work in security consultancy, mainly in the field of advising companies how to protect information held on computer.

I really only ever hacked Prestel. Not because I wanted to be a hacker, but because as a journalist I wanted to highlight how systems like Prestel were so insecure. Remember that various financial companies use Prestel as the basis of their system for maintaining account balances for their customers. I wanted to warn people that the Prestel and BT staff really didn't know what they were doing.

People ask me what was in HRH's mailbox. Nothing exciting – just a couple of messages to congratulate him on the birth of his latest grandson.

AS: *Why did you stop?*

RS: When I was arrested all my computers were confiscated and it took a year to get them back. By the time I got them back I'd lost the habit.

JUST ANOTHER HACK

So what exactly is involved in hacking and what equipment is used? Is your Amiga set-up at home under threat? We tracked down a hacker and asked the questions. For obvious reasons, he wishes to be known only as "Bob". Here's what he had to say for himself.

***Amiga Shopper:** What equipment do you use for hacking, in terms everyone will understand?*

Bob: Basically it is all really simple stuff, man. All you need is a computer – I started with an Amiga but have now moved on to really expensive kit – and a modem. A modem is just a little box which converts computer data into soundwaves which can then be transmitted over the telephone to another modem which converts them back into data which the computer that end will understand. You need a phone as well, of course – preferably more than one line so you can do more things.

***AS:** And how do you hack, basically?*

Bob: Well, all you are doing is connecting your computer to a network of other computers. Simple as that. A network is just a load of computers connected to each other, enabling users with a terminal on their desk to access all the information held on the central computer as if they had that on their desk instead – like I said, simple, man. Your readers have nothing to fear from us – I can't do any damage to their computers at home. They have more to worry about from the real criminals out there who write viruses or pirate games. I can't gain access by telepathic means yet, although I am working on it. *[Laughs.]* The clever bit – and believe me all hackers are clever – is getting past the roadblocks the network security people put in your way. Luckily most of them are friggin' idiots. I mean, only an idiot would use a password like "password" or "sysman", and they get used a hell of a lot. I should know.



"Bob", a self-confessed hacker, has an impressive collection of high-tech, high-spec equipment. Shame he can't find a legitimate use for it.

***AS:** What do you get out of hacking? Why do you do it?*

Bob: I do it 'cos I can. I do it 'cos I'm better than them, man. I know more about computer networks than most of the people working on the things, certainly more than your average System Manager. It's really a sort of personal Krypton Factor for me, and I win every time.

***AS:** Can you tell us something about your most exciting hack?*

Bob: They are all exciting, man. I wouldn't do it otherwise – I'm not some boring spotty ****, you know. I guess the bigger systems are the best – you feel like you've got one over on them even more. I hacked into a large corporation – I'm not going to say which one as I don't want to risk you giving my name out, man – and managed to really get round that system before I was spotted and had to ease up for a while. I'll definitely be back there though, when they think it is all safe. *[Laughs.]*

***AS:** Are you worried about the possibilities of getting caught, and having to face the consequences under the hacking laws?*

Bob: I won't get caught. I'm too good. Simple as that, man. Consequences of the law? Don't make me laugh. I'd get off anyway. That other bloke did, didn't he, the guy who was addicted to computers, they said. *[Bob is referring to the Bedworth case.]* Well I'd just say the same and get off – simple, man.

just about anything they felt like. How they did this is explained by Robert Schifreen himself in the interview below, but *what* they did included breaking into the personal Mailbox of HRH Prince Philip, changing the exchange rate shown in the financial section (£1 became worth $50 for a while), and altering the main index page slightly so that the word "index" became "idnex". When discovered, the hack became front page news in the tabloids, made the major news programs on TV, and led to a brief period of hacker hysteria in the media.

Both Gold and Schifreen were eventually arrested following a long and complicated police operation, and were charged with forgery because there were no laws against hacking in the UK at the time. The total amount of the forgery was a mere £11. Both men were found guilty as charged and fined, but immediately appealed. The appeal then overturned the original verdict, so the prosecution appealed to the House of Lords, the highest appeal court in the country. The Lords upheld the first appeal and Gold and Schifreen were acquitted of the charges. So in the end a "theft" of £11 cost the British taxpayer nearly £2 million in legal costs.

THE "ADDICT" CASE

More recently the case of Paul Bedworth has also been front page news. Bedworth, along with two others, was charged with gaining unauthorised access to various computer systems, including Brighton Polytechnic, The European Organisation for the Research and Treatment of Cancer, The European Economic Community, and the Financial Times, and modifying the systems entered. All three were arrested while actually hacking. His

Also, I'm sure my phone is occasionally tapped, which has discouraged me from taking up the hobby again.

I hacked to prove a point, and once I'd made that point there was no need to continue hacking.

***AS:** What potential dangers to society do you see as a result of hacking?*

RS: Today we rely totally on computers for so many things. Much of our lives is controlled by the Police National Computer, the DVLA in Swansea, the Inland Revenue systems, the NHS systems, the banks, and more. Operators of such systems have to realise that they need to take computer security seriously.

***AS:** What are your feelings about the tougher laws against hacking these days?*

RS: I think they are a good idea. If people hack into a computer and deliberately damage information, then they deserve to be punished. However, so does the person who left the information in a state which allowed the hacker to get at it. If a bank manager leaves the front door of the branch open at night, and leaves a pile of bank notes just inside, then of course the thief who steals it deserves to be punished but the bank manager is also at fault.

***AS:** Do you think the Computer Crime Unit at New Scotland Yard are up to the job of putting a stop to hacking?*

RS: No, and they don't pretend that they are. The CCU consists of only a handful of people, who have the staff and money to concentrate only on big crimes such as fraud involving millions of pounds. A recent case involving the jailing of three young men who broke into a number of systems took many months of the CCU's time, during which hundreds of minor hacks went unreported and unsolved.

***AS:** What do you think of the Paul Bedworth case, where he was found not guilty of a fairly major hack on the defence of "computer addiction"?*

RS: Remember that a court trial is nothing more than a contest to find out which side has the best lawyers. In this case, Bedworth's lawyers were superb. They did what they were paid to do, and they succeeded. Many computer security experts, myself included, said from the start that the Computer Misuse Act was poorly worded and that people would try to work round it by denying the "intent" to hack. The jury had no option but to acquit. The fault lies with the Home Office, who drafted the legislation.

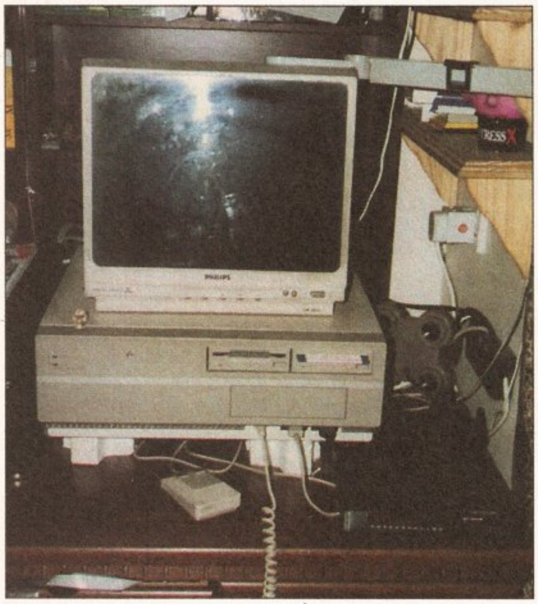
***AS:** As an ex-hacker, what is your opinion of hackers today?*

RS: Hacking is irresponsible, and I certainly do not condone it. We need effective legislation and an effective police force to prevent it. But most of all, those whose job involves the storing and processing of information need to be taught how to take care of it.

It isn't difficult as long as you learn to think the way a hacker would think.

two co-defendants pleaded guilty but Bedworth entered a plea of not guilty. Just 17 at the time of his arrest, he used a defence of “computer addiction”. The defence was successful and Paul Bedworth was found not guilty – to a blaze of publicity and to the public disappointment of Scotland Yard's Computer Crime Unit.

Bedworth's barrister, Alistair Kelman, specialises in the area of



An Amiga and a modem – all you need to get on-line to a Bulletin Board, other Amigas... or a private network?

computer crime and also defended the Prestel Hackers. He has a background in science and engineering, and is also Honorary Legal Advisor for the Independent Commodore Product Users Group (ICPUG), and an Amiga user himself. He told *Amiga Shopper* that “the defence of ‘addiction’ is only open to vulnerable people – a retired bank manager who decides to hack as a hobby could certainly not rely on it. Paul's father had left when he was small, he was an isolated child, and evidence was presented in the trial which suggested that his best friend was his computer.

“The defence could be used again,” Kelman explained, “if the police decide to prosecute a child from a difficult background for hacking, but it would be far better if they concentrated on computer crimes performed by adults such as those in the City by employees of financial institutions – these damage all of us in one way or another.”

Kelman sees “intellectual copyright” as increasingly important. “Copyright is our method of linking the world of ideas with the world of commerce,” he says. “It is essential that a man who labours for months or years in devising some new book or program is rewarded for his labour. As our society has got more complex,” he goes on, “far more industrial capital is tied up in intellectual investments rather than in mechanical investments. Today the major investment in white goods like washing machines is in writing the software which controls the machine. 15 years ago, a similar-looking washing machine used a fancy mechanical switch driven by clockwork to perform these functions. As more investment is tied up in intellectual property, so it will become the subject of disputes. However, I do not see litigation as being the automatic solution; sometimes arbitration or dispute resolution using experts will be the right way forward.”

CLUBS AND COPPERS

Like any underground movement, the hacking world has its own press. *PHRACK, Legion of Doom,* and *2600: The Hacker Quarterly* are all publications, either in traditionally-published format or available electronically, for and by hackers. They contain hints and tips, targets, news, and technical information. Similarly, there are many "clubs" for hackers – the biggest and most infamous is probably the German “Chaos Club”. Supposedly formed to be dedicated to the freedom of information, it would appear to be much more than that. For example, in 1984 Chaos Club members made a very public hack into the German equivalent of Prestel. There are regular large, and well-publicised, meetings for Chaos Clubbers which attract hackers from all over the world.

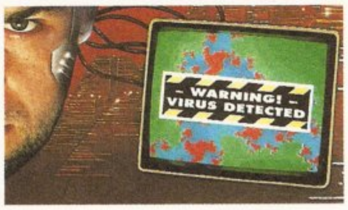
Hacking may seem like a fairly innocent and trivial hobby carried out by a bunch of computer anoraks, but think again. In a world which is becoming ever more dependent on computer technology, the opportunities for major crime and mayhem are increasing, and the consequences are potentially more and more disastrous.

In recognition of this, New Scotland Yard's Computer Crimes Unit, led by Detective Inspector John Austen, can be called upon by any police force across the UK. The CCU's officers are not computer experts but rather experts in the investigation of computer crime, and have been very successful in getting cases to court.

The CCU deals mainly with hacking cases – mostly offences committed under the new Computer Misuse Act 1990, which makes it an offence to secure unauthorised access into any computer, to change any data or program, or to attempt any of these.

The CCU does not deal with pornography (that is an area for the Obscene Publications Squad), but it does investigate cases where viruses are concerned, and it has a training role to help ensure that officers nationally gain a better understanding of what is involved in computer crime.

If you have any information on computer crime, the CCU would be pleased to hear from you. Just call New Scotland Yard on 071 230 1212 and ask for the Computer Crimes Unit.



VIRUSES

In 1985, Fred Cohen, a University graduate, wrote a paper on self-replicating computer programs and dubbed them computer viruses. The term has been in common use ever since. Currently there are estimated to be almost 2,000 different viruses in existence, and more than 200 of them are Amiga-specific.

A virus is just a program that can “infect” other programs by modifying them to include a copy of itself. There are four main types of viruses:

❶ A “boot virus” is located in the boot block of a floppy disk. This is simply an area of the disk which contains information that is used to "boot up" or start the computer or the program on the disk. Boot viruses are among the easiest to detect and cure. It is usually just a matter of replacing the infected boot block with a clean one, which any virus killer worth its salt will do.

The real problem is when a commercial game has been infected in this way, because the boot blocks are generally not standard. (They use elaborate copy-protection and auto-booting systems.) Replacing such a boot block with a standard one will result in your £30 worth of game refusing to do anything. Another

THE VIRUS BUSTER

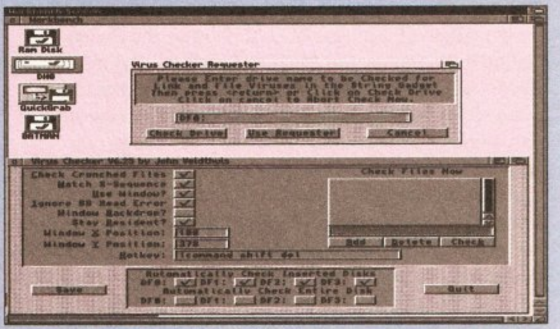
John Veldthuis is a 33 year old supervisor in a cheese-making plant in New Zealand. John Veldthuis also happens to be the programmer behind one of the best virus-checking programs on the Amiga, *Virus Checker.*

In 1985 he bought one of the first A1000s in New Zealand, and has been in love with Amigas ever since.

Amiga Shopper: *Why did you start writing virus checkers and killers?*

John Veldthuis: Originally it was to learn how to program the Amiga. I got hold of the source code to *VirusX* (Steve Tibbett's virus killer, which was the number one program for many years) and thought “I can do this in Assembler, and it will be smaller and faster”. It was definitely smaller but just wasn't any faster.

People started sending me viruses so I could add them to the ones which could be detected and killed, requests for new features came in, and so on. I guess the crowning glory was really when Workbench 2.0 arrived and the **gadtools.library** came into action. Steve Tibbett sent me some C source code that started out as the Graphical User Interface for *Virus Checker* under WB2.0 and all I did was change the code into Assembly and



Virus Killer hard at work protecting your computer. It's powerful, easy to understand, and regularly updated.

added it to *Virus Checker.* Things have just gone on from there.

AS: *So why do you still continue to write virus killers?*

JV: Most of the other virus killer writers seem to be pulling out, so there are not many left. I must admit that I too almost pulled the plug at one stage. I came home to find an error requester sitting on my BBS screen, and to

BE SAFE, NOT SORRY

The only way to get a virus on your Amiga is if it is copied over from an infected disk, or down a modem line from an infected source. But don't be too alarmed: there are some very easy steps you can take to make the risk of getting infected by a virus of any kind very small indeed.

❶ Always use an up-to-date virus killer and make sure it is running every time you use your computer. This will check your hard disk and any floppy disks you insert for the presence of viruses. The two programs I use are *Virus Checker* by John Veldthuis (interviewed below) and *VirusZ* by Georg Hormann. The most recently available version of *Virus Checker* is usually included on the *Amiga Shopper* cover disk – we always practise what we preach. (Most recently, version 6.25 was on the disk with *AS* 27 – if you missed that, turn to page 108.)

❷ Never use pirated software. Pirated disks are notorious for unwelcome "extras" like viruses.

❸ Always keep your disks write-protected until you have to save data – this prevents any viruses from being written to them.

❹ Get into the habit of using a virus checker on all programs you get from PD companies or download from a BBS. The vast majority are reputable and reliable, but it only takes one infected disk to jeopardise your whole software collection.

❺ Remember *not* to virus-check commercial auto-booting games disks. Virus-checkers tend to interpret their non-standard boot blocks as possible viruses, but you must never attempt to "kill" these. So long as these games run alright, leave well enough alone.

point is that boot block viruses can, and do, get copied to a hard disk – they write to track 0 of your hard disk and render it useless.

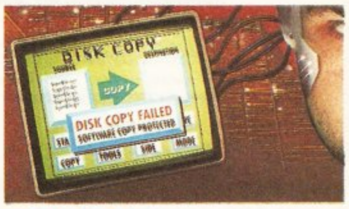
❷ A "link" or file virus is a much nastier beast altogether. Link viruses attach themselves to any executable files (the program itself – the really useful bit that makes your word processor actually process words), and then go looking for other executable file to link to and infect. Many keep a count of how many files they have infected, and at a set point do something very nasty like trash your hard disk.

❸ A "trojan" is a virus that hides as a perfectly legitimate program, thus the reference to the Trojan horse. An example of this is the so-called "AIDS virus" – not the actual virus, but a major blackmail attempt by a man called Joseph Popp. Disks were sent out to subscribers to a PC magazine, claiming to contain a program which gave details about AIDS. These were sent at a time when AIDS hysteria was rife. However, if you ran the program it would write a virus to your hard disk and produce a message asking you to purchase a "licence" which would disinfect your machine. It is estimated that at least 20,000 disks were sent out. A long investigation headed by the Computer Crimes Unit at New Scotland Yard eventually tracked down "Dr Popp" in the United States and he became the first person ever to be extradited for a computer crime. He was committed to trial for writing a "malicious program". The case, however, never got to trial. Popp's behaviour had become somewhat odd – he had started wearing a cardboard box on his head to protect himself from radiation and was putting curlers in his beard – and the Crown Prosecution Service decided he was unfit to stand trial.

❹ "Bombs" are very nasty because they are written purely to destroy data. They don't replicate like the other kinds of virus covered here, but rather lie dormant within your machine for a set period of time and then "explode". When they explode they can do various things, depending upon the particular bomb – some delete files, others release another virus, some trash the hard disk completely.

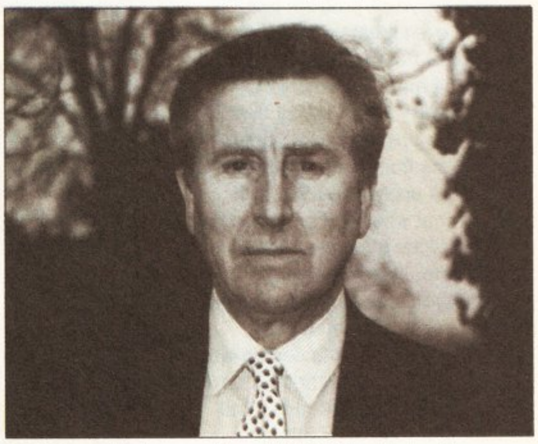
THE VIRUS BANK

Safe Hex International is a storage centre for data about viruses – a kind of virus bank that contains more than 1,800 Amiga and PC viruses. Safe Hex International write articles for magazines about virus problems and solutions. And, of course, they keep all the latest virus checking programs. For more information you can write, enclosing two International Reply Coupons, to: Safe Hex International, Erik Loevendahl Soerensen, Snaphanevej 10, DK-4720 Praestoe, Denmark. ☎ + 45 55 99 25 12, Fax : + 45 55 99 34 98



PIRACY

Piracy is something of a misnomer. It certainly isn't a romantic and dramatic pastime, as the name might suggest. Piracy is, quite simply, theft. The plain fact is that it is illegal to copy any piece of commercial software unless you have the express written permission of whoever holds the copyright to that software. Copyright is just what



Bob Hay, chief executive of FAST (the Federation Against Software Theft) and pirate-buster supreme.

cut a long story short it turned out I had a faulty hard disk controller. All but one partition of my disk restored okay; the one that didn't was carrying the source code for *Virus Checker*. I spent hours trying to recover it, but to no avail, and decided to give up. However, I got so many messages pleading with me to continue my work that I spent even more hours and eventually managed to put everything back together and carry on. I get real satisfaction in seeing viruses destroyed.

AS: *Many virus killers in the PC marketplace are commercial programs. Why don't you do it on a commercial basis?*

JV: Well, I have been offered the chance plenty of times, but it doesn't really sit well with me. I honestly do this to help others and don't feel I should get a benefit from other people's problems. I do still like getting money that people send me of course, but it isn't enough to cover costs. To be honest the *Virus Checker* project has cost me quite a bit of cash.

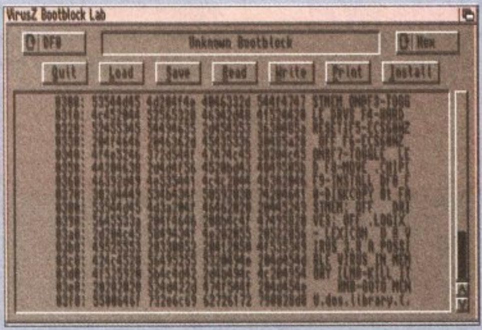
AS: *Why do you think people write viruses, and what do you think of these people?*

JV: I feel the scum who write viruses should be taken and melted down for dog food. They are *not* good programmers, and it shows in the viruses they write. There are maybe only two viruses that will run on all machines and under all versions of Workbench. This just goes to show what a bunch of useless twits they are. What they get out of the destruction of data is beyond me. I would guess that it makes them think they are good, but in real life they are just losers. Viruses to me are very simple, and I have not yet found one I cannot disassemble, given time.

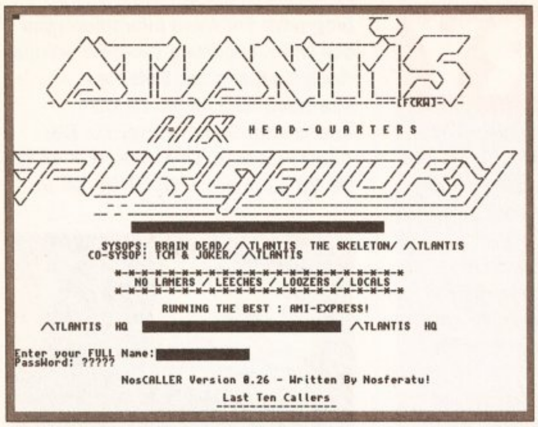
Since I have my checker running all the time I have yet to be troubled by a virus. The closest I came was with the Saddam Virus, and *Virus Checker* warned me of that as soon as I put the disk in the drive. Ten minutes later I had it disassembled and removed from memory, and ten minutes after that it was included in *Virus Checker*!

AS: *Do you think the virus threat will ever go away?*

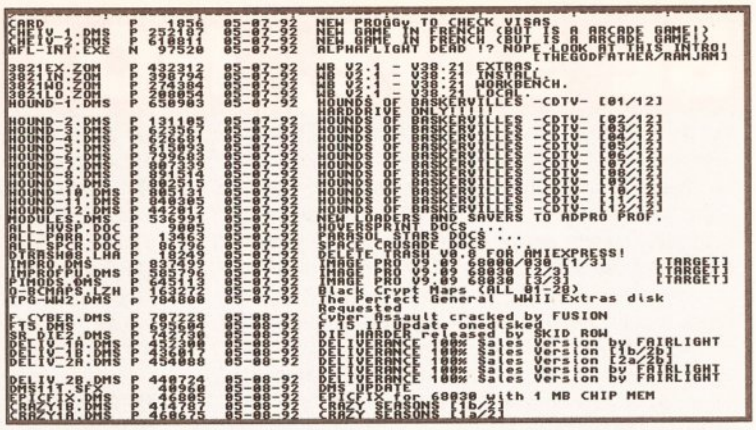
JV: I don't think it will ever totally go away, but the numbers of new viruses for the Amiga are definitely slowing down. There are quite a few bootblock viruses that have been changed, and even today many of the viruses I get sent to me are really only old viruses that have had the message changed.



VirusZ, another virus checker, works in a slightly different way, so it may be a handy double-check.



A pirate BBS – completely illegal and immoral. Not like pirate radio stations at all, which were just illegal.



Just a small selection of the pirated software made available for download from a pirate BBS. Note that even CDTV titles are not safe.

the word says: the legal right to make copies of something, whether it be a novel, a painting, a piece of music or a computer program – and that right belongs exclusively to the person who created the work.

The copyright problem has become even greater in recent years because of the number of demos containing musical samples of artists' work – which is still theft if permission has not been granted – and images from films, to which the same laws apply. Have you ever thought that when you purchase one of these types of demos, someone, somewhere, is losing money?

The problems of piracy are bad enough in the UK, but some countries such as India don't have the same strict copyright laws as we do, and this has resulted in them becoming a "one-copy culture". Literally one original piece of software is purchased and then copies of that are made and sold nationally. Some Far East countries have thriving black markets for software, as for "Rolex" watches and other fake products.

"There has been no authoritative research completed on the extent of leisure software piracy [in the UK], but the general perception is that it isn't getting any better," says Bob Hay, Chief Executive of FAST (the Federation Against Software Theft). "Our priorities are mail order pirates, pirate Bulletin Boards, and car boot fair piracy," he continued. "Indeed, we closed down a pirate BBS just last month and criminal charges are pending."

Martyn Brown from Team 17 Software Ltd, publishers of *Alien Breed, Body Blows,* and *SuperFrog,* says: "Piracy *is* driving developers away from the Amiga. It's fact, not fiction. All forms of piracy are doing it, so anyone who copies the odd game is as much to blame as the organised teams. Every game we release is hit very badly, *SuperFrog* particularly so. If nothing changes, and I doubt it will, I think we will be looking towards the Amiga as a market for budget re-releases and move ourselves into more profitable areas."



Copy protection stripped away, and pirate "Dr Doom" boasts of his "accomplishment" as Formula One Grand Prix becomes yet another pirate statistic.

Simon Cooke of Envision, programmers of *Lost Patrol, Flag,* and *Last Armageddon,* adds: "Piracy is never acceptable, but software companies are not helping themselves by insisting on high prices. I believe full price software should retail at £15 – £20. I've had to spend time and money devising copy-protection techniques to make it harder for pirates to crack my games, time I would rather have spent on something else. Most importantly, piracy has affected the formats that I will write for – my current Amiga game is likely to be my last. The Amiga has, by far, the largest piracy problem of any current leisure computer. The cartridge- and CD-based systems offer a much more secure medium."

Graeme Ing has written many games on the Amiga, including *Raider, BSS Jane Seymour,* and *Utopia.* His views are much the same. "I firmly believe we will never stop piracy. I believe there is a niche in the market to provide limited-level demos of games that can be purchased for a few pounds, refunded if the full game is bought. This removes the argument for obtaining a pirated game to evaluate it. However, this has been suggested many times and the publishers don't want to spend money to make this scheme viable, yet are quite content to whinge about the huge losses due to piracy! The law as it stands is pitiful," he concludes, "and its power needs to be increased against piracy."

SPREADERS AND SUBVERSIVES

There are three major methods of distributing pirated software:

❶ The school playground syndrome

This is perhaps the most common, and certainly the hardest to prevent. This is where you copy a game and pass it on to a friend, who then passes it on to a friend and so on. There are also fairly organised swapping-by-mail sessions, where people send each other long lists of games and make mutually-agreed swaps by post – fine if you're swapping original disks and complete documentation, a crime if you're passing on illegally-made copies. The only answer here lies in educating people that what they are doing will eventually lead to the demise of the computer they love so much.

❷ Pirate Bulletin Boards

These are another thing altogether. There are, I'm sure, a few BBSs which have hidden areas where only "elite" privileged users can access files, and these areas contain pirate

A PIRATE SPEAKS

Amiga Shopper spoke to a self-confessed software pirate, whose identity we have agreed to protect in order to get an insight into why people become pirates.

"Harold" (not his real name) is not what you might expect of a typical pirate, at least not in appearance. He is a 32 year old computer programmer, intelligent and of smart appearance, who spends his days looking after a large network and his nights cracking games and swapping pirate software. We asked him why.

Amiga Shopper: *Why did you get into pirating?*

Harold: Originally I think it was the same reason as everyone else. I bought a couple of games for my Amiga, spent over £20 on each of them, and found they really were useless. The reviews they had been given in the magazines were totally untrue, just there to help make yet more money for a big publisher. I thought, "Why should I give my hard-earned money to these guys, just for crap?" I advertised in *New Computer Express [a weekly computer magazine, now discontinued]* for "Amiga Contacts". Within a week I had been sent more than 20 listings of pirated software collections – I had even got half a dozen pirated games sent to me. I wrote off to all of them, and started collecting software. Because I didn't have anything to swap to start with, I paid for the disks. At only £3 or £4 a game it represented good value for money. Then I thought, it can't be that hard to remove the protection on games, so I tried it on a couple of games I had and found it was a doddle. I wrote to a couple of the "cracking crews" mentioned on my game disks, and found one which was happy to let me join.

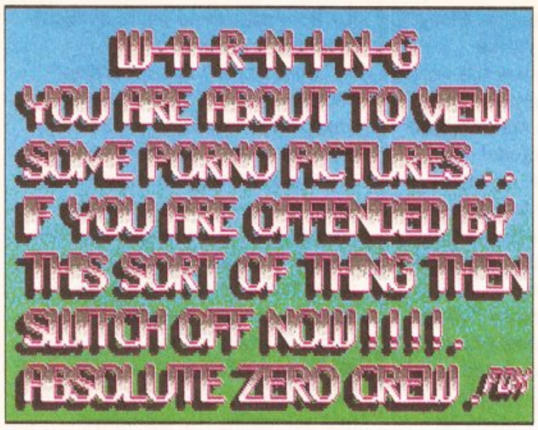
AS: *How many games do you actually have?*

Harold: I really don't know, well in excess of 1,000 I should think.

AS: *Surely you can't have played them all?*

Harold: No, I haven't played very many. Mainly because most are total crap.

AS: *So if you find a game that you really like, do*



Sorry, we are just not allowed to show dirty pictures, so you'll have to imagine the worst yourself.

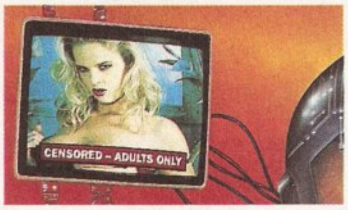
software. But I think the scale of this problem is minute. The real problem is with *organised* pirate boards, ones that are part of the piracy underground and exist solely to distribute pirated software. I have been chasing around trying to catch up with some of these BBSs for this article, but it has proved to be a difficult task. No sooner do you get a lead on one than it changes number and closes down. However, I did manage to infiltrate a couple of them and was amazed by the sheer quantity of commercial software available for download. Another worrying aspect of these illegal BBSs is that they can also carry material such as pornography and "subversive" literature. A good example is the *Jolly Roger Cookbook* available from many pirate boards: it contains over 100 text files on subjects such as making explosives, making guns, manufacturing drugs, breaking into houses, and hacking. There has already been a case where a schoolboy actually built a simple pipe bomb using these instructions and tried to set it off in the school playground!

Malcolm Arnold, Chairman of CommUnity (the Computer Communicators Association), emphasised his organisation's "belief in the communications Net as an essential vehicle for freedom of speech and expression. CommUnity maintains that current legislation adequately deals with the comparatively small proportion of illegal activity on the Net, and strongly rejects the notion that new special, or stricter, laws are desirable or necessary. Put simply, we believe that people should be as free on the Net as they are in wider society: that anything which is legal – or illegal – in wider society should be considered so for the Net."

❸ Organised sales

Organised sales are the sort of thing that FAST are trying very hard to get closed down. This is where software is being sold, sometimes by mail order, sometimes in shops, sometimes at car boot fairs and markets, but always as a legitimate original product when in fact it is nothing more than a pirate copy.

The best advice here is to keep your wits about you. If you see software for sale at an unrealistically low price, or in any packaging other than the original box, or with labels and documentation missing, keep your cash in your pocket. If you buy any software by mail that arrives with hand-written or cheaply-produced labels instead of proper professionally-produced ones, inform FAST (☎ 0628 660377) at once. Buying pirated software is no bargain: apart from the questionable morality, buying the pirated version means you get no after-sales support or technical back-up if you need it. What's more, you've cheated the programmer and the software publisher – and shrunk the market for Amiga software, which means in the long run that they won't bother developing anything new for your machine. And that means that in the end we all lose out.

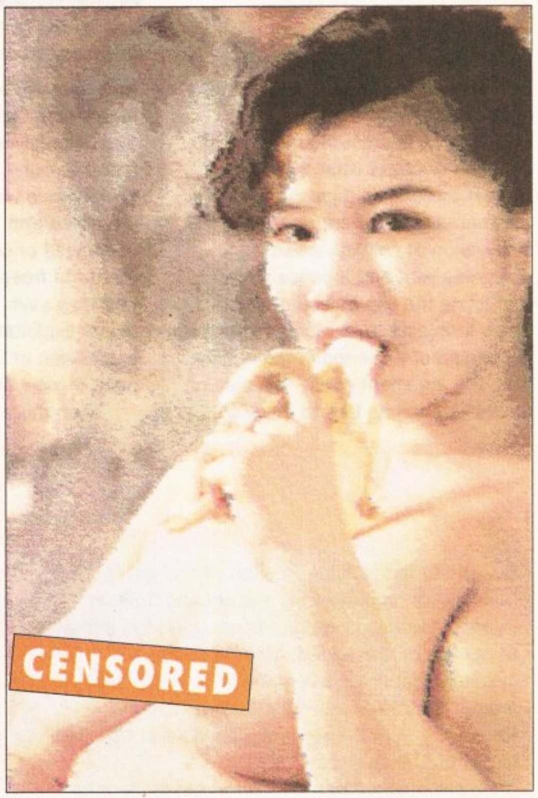


PORNOGRAPHY

This can be a real thorny issue – people tend to have their own definition of what is pornographic. However, what's important is what the law says. According to Section 1 of the Obscene Publications Act 1959, something is obscene if is "likely to corrupt or deprave" those who are likely to come into contact with it.

There has been a lot of publicity recently in the tabloid newspapers about the availability of pornography on BBSs, and the fact that schoolkids can get hold of it if they have access to a computer and modem (and many do these days). I have yet to find hard evidence that the problem is a great as is being made out. Sure there are some rogue operators out there, but they are only a very small minority. The reputable systems tend to police themselves, and the only type of "erotica" you will find on these is of the page-three sort – certainly "softer" than most of the magazines any schoolkid could find on the top shelf in any high street newsagent's (any schoolkid who was tall enough, at any rate).

Ian Mugridge, sysop (SYStem OPerator) of The Demo Factory BBS (☎ 0892 516304) told *Amiga Shopper:* "Many sysops would probably argue that there is nothing wrong with having soft porn of the glamour/page three type available on a BBS, and that they make sure only people over 18 years of age have access to it. However, I can see no justification for having any hard core or illegal porn available.



An example of the soft porn you can find on some BBSs. Not exactly obscene, but is it suitable for kids?

"Personally I don't allow *any* form of pornography on The Demo Factory – I don't feel it is possible to be 100% certain that the person downloading it is over 18."

More worrying are the number of PD companies that openly advertise "soft porn" collections on floppy disk. It has been sadly proven on many occasions that these collections are not as soft as they would appear. A number of hard-core porn disks have been available, usually consisting of stills taken from pornographic videos – the sort of things that on film would not get past the censors in this country. The Obscene Publications Squad have noticed this too, and have been making progress in catching up with the worst offenders.

But it isn't just photographic material that can be considered pornographic, there is the written word as well. One of the world's biggest communications networks, the American-based USENET system,

you actually go out and buy it?

Harold: No, there isn't any point, is there. Why should I spend good money on software I already have?

AS: *But isn't this going to destroy the software market for the Amiga? Developers just won't be able to afford to, or want to, produce games for a platform which has such rife piracy.*

Harold: Hold on, don't try and blame me or people like me for the problem. We are the people who keep the Amiga alive. We are the users, the enthusiasts. We *love* the Amiga. It is the selfish and greedy b******s who call themselves publishers that are killing the machine, not us. If they were to sell the games on at a reasonable profit, instead of going all out for the big kill, then piracy wouldn't exist. If I could have got, say, *Formula 1 Grand Prix* for under £10 instead of it costing £35, then I would have bought it, not pirated it.

AS: *What about the argument that it is you who are being selfish? What gives you the right to steal someone else's income? Programmers spend a lot of time developing a game, and they don't do it for the love of it. You should know that, being a programmer yourself, surely?*

Harold: I don't want to continue this interview.

At this point "Harold" decided the interview was over and left the pub where we had met. I have spoken to other pirates and none of them seemed able to accept the damage they are doing, which is really, really sad.

carries a number of newsgroups which could certainly be called pornographic. A newsgroup is an area where you can post messages relating to a specific subject area. One of the biggest USENET providers in this country is UKNET (they basically pipe the groups through from America), and UKNET have a policy of not providing newsgroups which they feel are pornographic – for example, groups which discuss such topics as bestiality.

Now, one has to be very careful in this area of discussion. Where does the balance lie between freedom of expression and exploitation? In the United States, the Supreme Court has ruled that the First Amendment to the US Constitution guarantees freedom of speech no matter what the subject, so that there is no legal difference between a government restricting the expression of political views it disagrees with and a police force restricting the expression of sexual views it objects to. So long as no-one is coerced or exploited in the making of it, the argument goes, "consenting adults" should be free to enjoy any



Now honestly, would this prevent children from going on to look at the pictures? Entice them in, more like.

written or pictorial matter they wish. In this country, the argument has been almost exactly the reverse: not just the young and innocent but society as a whole must be protected from the risk of being "depraved or corrupted". It is not a matter of freedom of expression, so this view says, because pornography is just exploitation, not the expression of ideas or a legitimate point of view at all.

Then there is the problem of classification. Many people in this country use the word "pornography" to include not only hard-core material (the sort that is illegal) and "indecent" pictures (top-shelf magazines) but also "glamour" photography (topless page three girls and the like). In the States, only the first category would be classed as pornography, though there are many groups, from religious fundamentalists to feminists, who campaign for the restriction of the other categories as well. Here, it is hard to argue that computer users have to be protected from the sort of images that they could see every day in tabloid newspapers – ironically, the same newspapers that get on their high horse about the alleged danger. And the final twist is that often the images on disks and BBSs are actually digitised – you guessed it – from page-three shots or legally-available magazines.

Still, there is one overriding concern: children should not have unsupervised access to indecent material. If they aren't old enough to buy top-shelf magazines, is it right that they can get hold of images, sometimes even stronger than the images in those magazines, by virtue of the fact that they happen to be Amiga users and happen to know how to contact a Bulletin Board or PD library? Similarly, the phrasing of the Obscene Publications Act means that something can be judged obscene – and the people responsible for it can be fined or imprisoned – if children are likely to come into contact with it, even though it might be passed if it was carefully restricted to the over-18s.

WHAT'S YOUR VIEW?

Computer crime has the potential to affect every Amiga user. Do you think the law is tough enough to protect you? What more could be done? Let us know what you think. Write to: Crimeshoppers, *Amiga Shopper*, 30 Monmouth St, Bath BA1 2BW. AS

IN IT FOR THE CIX

CIX (the Compulink Information eXchange) is the UK's largest conferencing system and Bulletin Board. Obviously computer crime is always going to be high on the agenda when it comes to system security for an organisation which has around 10,000 users. Here's what Gordon Hundley, one of the System Managers at CIX, had to say on the subject:

Amiga Shopper: *How does computer crime affect CIX?*

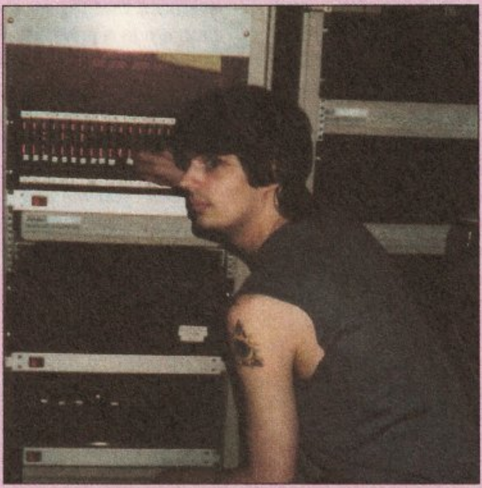
Gordon Hundley: There are a number of areas which we have to ensure that we are vigilant about: credit card fraud, software theft and breach of copyright, pornography, system break-ins and malicious damage. Not to mention locking the office up at night so we still have computers in the morning.

AS: *What measures do you take to prevent misuse of your system?*

GH: The conferencing system that forms the backbone of CIX is limited in what access it has on our computers, and heavily checked for possible loopholes. A large proportion of the development is expended on security aspects. Credit card validation is applied to all users of the system to prevent fraud. Because of our connection to the Internet, we also run software to limit what sites can access us and by what means they do so. Hiding away in the background we run an audit trail of commands run by the primary computers. Thanks to the manner in which we are set up, breach of password security of one of our users would not compromise our system. At that level, it is up to the user to maintain a difficult-to-guess password and change it regularly.

AS: *Is pornography a major problem for you?*

GH: It is a bit of a headache, rather than a problem. We regularly go and look through new uploaded files and remove ones which are any more explicit than what you would see in a tabloid newspaper. Perhaps we are guilty of a certain amount of prudishness, in that there are magazines easily and legally available in this country which are more explicit, and CIX supports closed conferences. The laws regarding pornography in this country are somewhat more extreme than many other countries, and on the



Gordon Hundley, one of the System Managers at CIX, the UK's biggest electronic network system.

whole are untested with regard to computer distribution.

AS: *Do you think legislation is required to protect your interests?*

GH: I believe that the legislation that currently exists in this country suffices to cover computer communications, and that the only problem is in the interpretation of the law. Since the laws which would cover crimes such as fraud, theft, copyright, misuse and damage on computer systems are not very explicit, the tendency is to be more restrictive than one would like in order to ensure that you are not challenged in an untested legal position. I personally don't think that we suffer because of this, though I'm no great fan of censorship.

AS: *What measures do you take to prevent viruses infecting CIX?*

GH: Given that the data flow on the systems we run is so large, we have to put the responsibility on the users to ensure that their systems are not compromised. On the whole it works well, with the moderators of the conferences checking files uploaded in their areas. Anybody who connects to an on-line service should really be running some form of virus-detection software. We do look after our own systems, although we run somewhat more esoteric systems than a typical home computer user. On the whole, most viruses are written to attack popular computers, so as to create as wide an audience for the authors as possible.

AS: *What is your view on people who write viruses and spread pirated files and pornography on BBSs?*

GH: I personally take a dim view of these people, and CIX runs directly in opposition to them. I would have no hesitation in providing information obtained to the correct authorities. I think that my view has been stated many times elsewhere, and I share the opinion that if these people wish to take the stage for their supposed skills, then they would be better off approaching projects of benefit to the community. Similarly, with respect to spreaders, there is a huge amount of freely-distributable software that relies on spreading and word-of-mouth recommendation.

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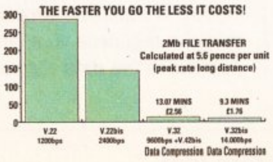
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The inside story

Sinking our hands more deeply into the guts of the 68000 chip inside the Amiga, we look at the structure and function of its internal registers and also learn what exception handling is all about.

In "Amiga Exposed" last month we explained the strategies that lie behind the various addressing modes employed by the 68000 central processing unit. In doing that we talked briefly about things like address and data registers and the program counter. This month we'll consider in some detail the whole set of the Motorola 68000's registers and discuss their functions. One of these is known as the Status register – and once we've examined its organisation and purpose this will lead us on to the topic of exception handling. This is the method by which the processor goes about dealing with interrupt conditions – they are what occurs internally when the 68000 finds that two or more operations are vying for its attention at the same time.

SO WHAT ARE ALL THOSE REGISTERS ABOUT?

The Motorola 68000 contains eight data registers, seven address registers, a supervisor stack pointer, a user stack pointer, a program counter and a status register. The address and data registers, the stack pointer and user stack pointer are all 32-bit registers. The program counter is a 24-bit wide register and the status register is 16-bit.

But what are they and what is their function? These registers can in one sense be viewed as memory locations in their own right, but unlike the rest of the Amiga's memory – the ROM and the RAM – they are physically located within the 68000 chip itself. Like addresses in the machine's main memory, they can have data written to them and read from them. However, you can also directly manipulate the information that is contained within them, which you can't do with memory.

Last month we discussed how these different registers are used for addressing – the process of locating the position of an item of information in memory. Apart from their use with the range of addressing schemes, the 68000's internal registers also fulfil a number of other important functions. These include the manipulation of data, exception handling – that is, dealing with interrupts, which we'll be looking at below – and controlling the flow of instructions. The registers are shown in the diagram on page 25.

DATA REGISTERS D_0 TO D_7

First off, let's take a look at what the data registers are used for. The 68000 has eight data registers, referred to by the identifiers D_0 to D_7, and their purpose is to store temporary data that is required by the processor. Their most general use is either as accumulators or index registers. An accumulator is just a storage location upon which we can perform a range of operations directly. To take an example, we can add the contents of another memory address directly to a data register – and end up with the result stored in that register.

Last month we explained what the purpose of index registers was while we were discussing the different types of addressing schemes that the 68000 supports. To recap briefly, an index register is used for modifying addresses as an intermediate step in calculating the final or absolute address that we want to obtain.

Now, we've already stated that the data registers are all 32 bits wide – but we don't have to manipulate them at this width unless we need to do so. The 68000 allows us to perform operations on them at three different widths – in byte (8-bit), word (16-bit) or long-word (32-bit) "chunks".

ADDRESS REGISTERS A_0 TO A_6

Now we'll deal with what the address registers are all about. Motorola's 68000 is equipped with seven address registers. In a similar manner to the data registers, they are referred to by the identifiers A_0 to A_6. In the next section we'll introduce another register, A_7. For the addressing purposes that we discussed last month it can be used in the same manner as the registers A_0 to A_6 – however, its main function is very different: it's used as the stack pointer.

Anyway, back to the address registers A_0 to A_6. They function in a very similar way to the eight data registers. Their principal use is for supporting the various address modification modes that we considered last month. For this purpose they are used either for indexing – that is, when we wish to modify an address to obtain an absolute address – or as "pointers" for indirect addressing – which means that the address in memory that they point to will contain the absolute address that is required. As in the case of the data registers, we don't have to access them at their full width of 32 bits; we can also manipulate them at word (16-bit) length, but not directly in byte (8-bit) sized "chunks"

A_7, THE USER STACK POINTER & THE SUPERVISOR STACK POINTER

The register A_7 is used as a stack pointer. The stack is an area of memory in the RAM that the 68000 reserves for storing temporary values – you may have heard of operations such as pushing something on to the stack or popping it from the stack.

Now, the best way to think of the stack is as being analogous to a pile of playing cards sitting on the top of a table. We can only access this pile from the top, either adding another card ("pushing something on to the stack") or removing one, which is known as "popping the stack". Implementing this concept on a computer is very simple. All that we need are a series of contiguous memory addresses in which to store the contents of each "playing card" and another location where we can store the address of the "playing card" memory location that is on the top of the "pile". It is this location that is known as the stack pointer.

Motorola's 68000 supports two stacks and each of these has its own pointer – the User Stack Pointer and the Supervisor Stack Pointer. We'll be discussing exactly when each of these is utilised when we come to look at the function of the Status register and the method by which the 68000 deals with exception handling. For the moment let's just accept that when the 68000 is in what is termed User mode it needs to access the User Stack Pointer, and when it is operating in its Supervisor mode it needs to use the Supervisor Stack Pointer.

Okay, so we have the User Stack Pointer and the Supervisor Stack Pointer – now what does this other register, A_7, have to do with any of it? Well, it is by calling this register that we access the correct stack pointer – the contents of the current pointer are held in A_7. Whenever the processor switches from the User mode to the Supervisor mode – or vice versa – the appropriate stack pointer is copied into the register A_7. This happens automatically and appears entirely transparent to other operations.

THE PROGRAM COUNTER

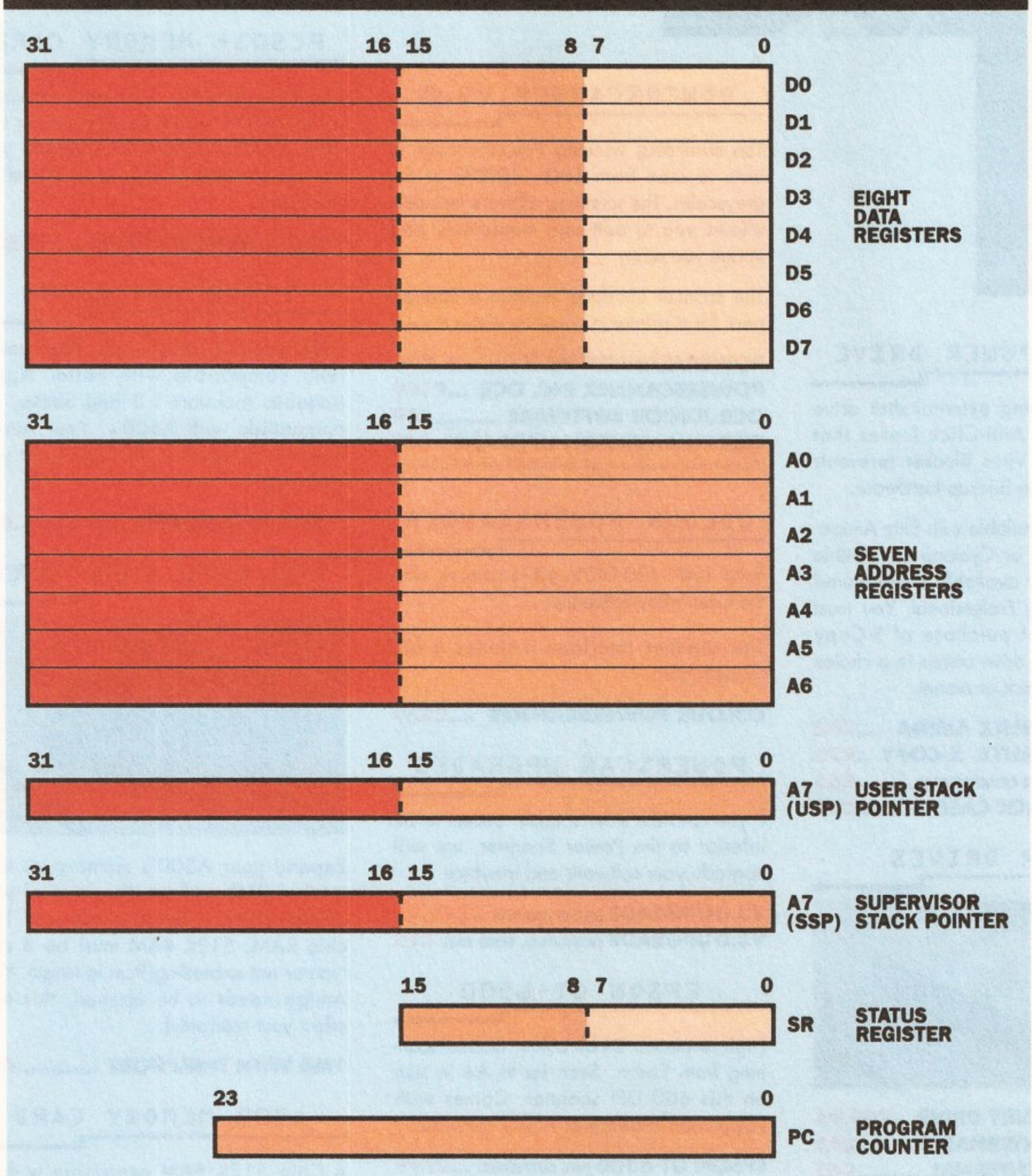
The next one of the 68000's internal registers is the Program Counter. Its function is to store the address of the next instruction *in sequence* to be executed.

The Program Counter has a width of 24 bits. It is this 24-bit width that restricts the 68000 to directly addressing 16Mb – that is, 16,777,216 memory locations – because 0 to 16,777,215 are the addresses that can be directly encoded within a 24-bit number.

Each time an instruction is executed the Program Counter is incremented – that is, added to – in order to give the address of the next instruction. This imposes the restriction that instructions must be either stored contiguously – that means in order, without any gaps between instructions – or jump instructions must be used to transfer control beyond the end of a contiguous block.

In fact, the Program Counter is

68000 REGISTERS



actually incremented before the current instruction is executed. The reason for this is that it allows the next instruction in the sequence to be pre-fetched, which improves the processor's performance. Obviously, if a jump instruction is encountered this pre-fetched instruction must be discarded and the instruction stored at the jump address loaded instead. When a jump instruction is processed the new address is automatically transferred to the Program Counter.

THE STATUS REGISTER

Now we come on to the final one of the 68000's internal registers – the Status register (see the diagram on page 28). It is a 16-bit register but from a functional point of view it is far better if you consider it as a pair of one-byte (8-bit) registers arranged side-by-side. The lower byte – bits 0 to 7 – is called the user byte, while the upper byte – bits 8 to 15 – is referred to as the system byte.

Let's look first at the user byte of the Status register. Only the bottom five bits are utilised – bits 0 to 4 – and these bits are each used to flag conditions as they occur during the processing of instructions. For instance if you're adding to an accumulator and the result is too large for that register to hold, the Overflow flag will be set in the Status register. These flags are also called condition codes and the five condition codes are:

- **Carry,** used in conjunction with other test flags such as Zero and Negative for implementing loop control structures.
- **Overflow** means that the result of a calculation is too large to be accommodated in the register concerned.
- **Zero** is used to flag when an equality test for zero has met the condition. For example, "jump if zero" will set a 1 in this flag if the test is true.
- **Negative**.is used in a similar manner to the Zero flag, to signal when a conditional test for a negative value is true.
- **Extend** is used to signal that more than one long-word is being used to represent a single quantity.

We treat each of these codes as single bits – which means that they can represent only two conditions: 0, which is known as "clear", and 1, which represents the "set" condition.

Next we'll move on to consider the system byte. Again, only five bits are utilised. Two are used as flags – bit 13, which flags whether Supervisor mode is active, and bit 15, which flags for the Trace option. The other three bits – 8 to 10 – are used to store a "mask" which is employed when dealing with interrupts – but we'll explain that in more detail in our next section on exception handling. For now the only thing that should be noted is that this mask can only be altered when the 68000 is in its Supervisor mode. Which brings us neatly back to bit 13 and just what Supervisor mode actually is.

The 68000 normally operates in one of two modes, User (also called Normal mode), and Supervisor mode, which is sometimes called Exception mode. There is a third mode known as Halted, but this is only invoked when a catastrophic hardware failure has occurred and requires a system reset to start the 68000 going again. User mode can be considered as the "standard" operating mode for the 68000 – the mode that the processor will be in when executing an instruction. If the Supervisor bit in the Status register is clear – that is, it contains 0 – then the processor is in User mode. If however the Supervisor flag is set – bit 13 contains a 1 – then the chip is in its Supervisor mode. This occurs whenever an interrupt is detected – but more on that under exception handling.

Bit 15 is the Trace bit, which is used to signal when tracing is on. Tracing forces the generation of an interrupt after every instruction has been completed. Its purpose is to allow a series of instructions to be "single-stepped" – a useful facility when you are trying to debugging a recalcitrant assembler routine.

EXCEPTION HANDLING

Exception handling is the term that is used by Motorola to describe what happens when the 68000 processor encounters a range of different "events" that generate an interrupt condition. On other processors you may have just heard this referred to as interrupt handling. Motorola use a different term principally to draw attention to the fact that the architecture of their 68000 chipset supports a variety of extended options for dealing with different types of interrupt conditions.

WHAT ARE INTERRUPTS?

So what are interrupts and what function do they perform? Interrupts are generated when it is necessary to "pause" or interrupt the process that the 68000 is currently dealing with in order to give priority to another – often time-critical – process. We can divide the sorts of events that generate interrupts into two categories: external events and

continued on page 28



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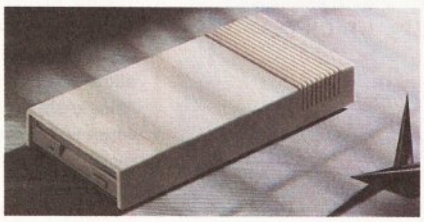
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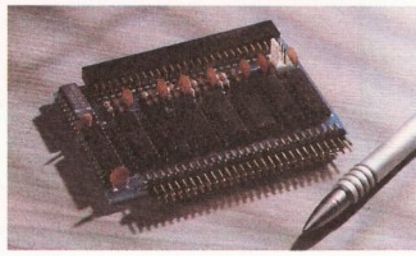
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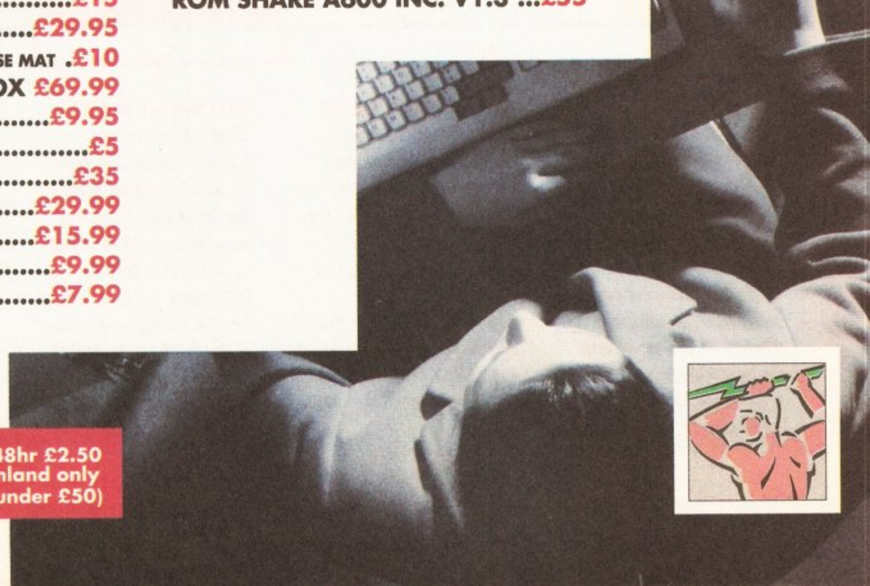
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continued from page 25

internal events.

Let's look first at the sort of external events that generate an interrupt condition – you may have heard these referred to as "hardware-produced" interrupts. A common example would be an external device that needs to attract the processor's attention for a short time while a data transfer is taking place. Dealing with keystrokes as they are entered at the keyboard is an example of a hardware event, as is data transfer to or from a disk drive or via one of the Amiga's other ports such as the mouse/joystick or the RS232 port. When we talk about an external event we don't mean that it is external to the Amiga; all that we mean is that it is not an event that is produced from inside the 68000 chip itself.

Following the same logic, internal interrupt conditions are those that are generated from within the 68000. There is a wide range of these. For example, an attempt to address a memory location that doesn't exist would produce an internal interrupt event. Similarly if when executing an instruction the processor encounters an op-code that isn't valid, then an internal interrupt condition will occur. If an error is encountered while processing an instruction – the overflow that occurs if you make an attempt to divide by zero is a good example – an internal interrupt will be produced. Internal interrupt events are not only generated by the processor, but they can be forced by the programmer. That's because the 68000's rich command set includes an instruction known as **TRAP.** When a **TRAP** instruction is encountered an internal interrupt event is automatically generated.

WHAT HAPPENS WHEN AN INTERRUPT OCCURS?

Earlier when we discussed the various functions of the Status register we mentioned that one of these was to store a "mask" that is used if a second interrupt occurs while the first is still being processed. Three bits in the Status register are reserved for this task – bits 8, 9 and 10. These are referred to as I0, I1 and I2. I0 is bit 8 and is the least significant. Your knowledge of binary should tell you that by using three bits we can encode eight different interrupt conditions – numbered 0 to 7. In fact, the Amiga can deal with more interrupts than just eight – but these are not trapped directly by the 68000; they are dealt with initially by one of the Amiga's custom chips – Paula – which sets a bit in one of its own registers before seeing if the 68000 is already busy handling another interrupt or is available to process the one that Paula is flagging.

When a 0 is set across these three bits it indicates that no interrupt is currently being handled – so User mode processing can continue because there is no exception to be handled. If however these three bits contain the values 1 to 7 then an interrupt has been detected. An interrupt of level 1 has the lowest priority and 7 the highest.

We will deal first with level 1 to 6 interrupts – level 7 interrupts are handled in a slightly different manner. When the 68000 encounters an interrupt condition, the three bits in the Status register that are dedicated to exception handling are set to the value of this interrupt. In the jargon this is called setting the "interrupt disable mask". The reason for doing this is that if a further interrupt occurs while the processor is currently occupied dealing with one, it will only be interrupted if the priority of the new interrupt is higher than that of the current one. To give an example, if the 68000 is handling an interrupt of priority 3, it will only be interrupted if the new interrupt has a higher priority – that is it is of level 4, 5, 6 or 7, but not if it is of the same or of a lower priority.

Now for level 7 interrupts. These are known as "non-maskable" interrupts. As with level 1 to 6, when a level 7 interrupt occurs the three interrupt bits in the Status register are set to the value of the interrupt – in this case 111. However, if a further interrupt condition occurs while a level 7 interrupt is still being processed then the processor is not interrupted to deal with this new event – which is why priority 7 interrupts are referred to as "non-maskable".

WHAT HAPPENS WHEN AN INTERRUPT IS PROCESSED?

The 68000 detects interrupts by testing the three Interrupt Priority Level input lines, pins 23 to 25 on the chip, and once it notices that an interrupt has occurred it copies the mask for that priority of interrupt into the three Status register bits reserved for the purpose. It then executes a series of instructions that are known as an interrupt handler. Different handlers are invoked to deal with each of the seven interrupt levels.

Now, before the 68000 can just leap off and process the instructions that are contained in the appropriate interrupt handler it has to make sure that it can pick up the main flow of processing at exactly the point where it was before the interrupt occurred. To do this it saves the values that are contained in the Status register and the Program Counter – it pushes them on to the current stack – and then enters Supervisor mode by setting bit 13 in the Status register to 1. A jump is now made to the address at which the instructions for the relevant interrupt handler are stored. This jump is made by use of a vector that is stored in a reserved area of the Amiga's memory – if you read last month's feature on addressing you should recognise that this is the process of indirection.

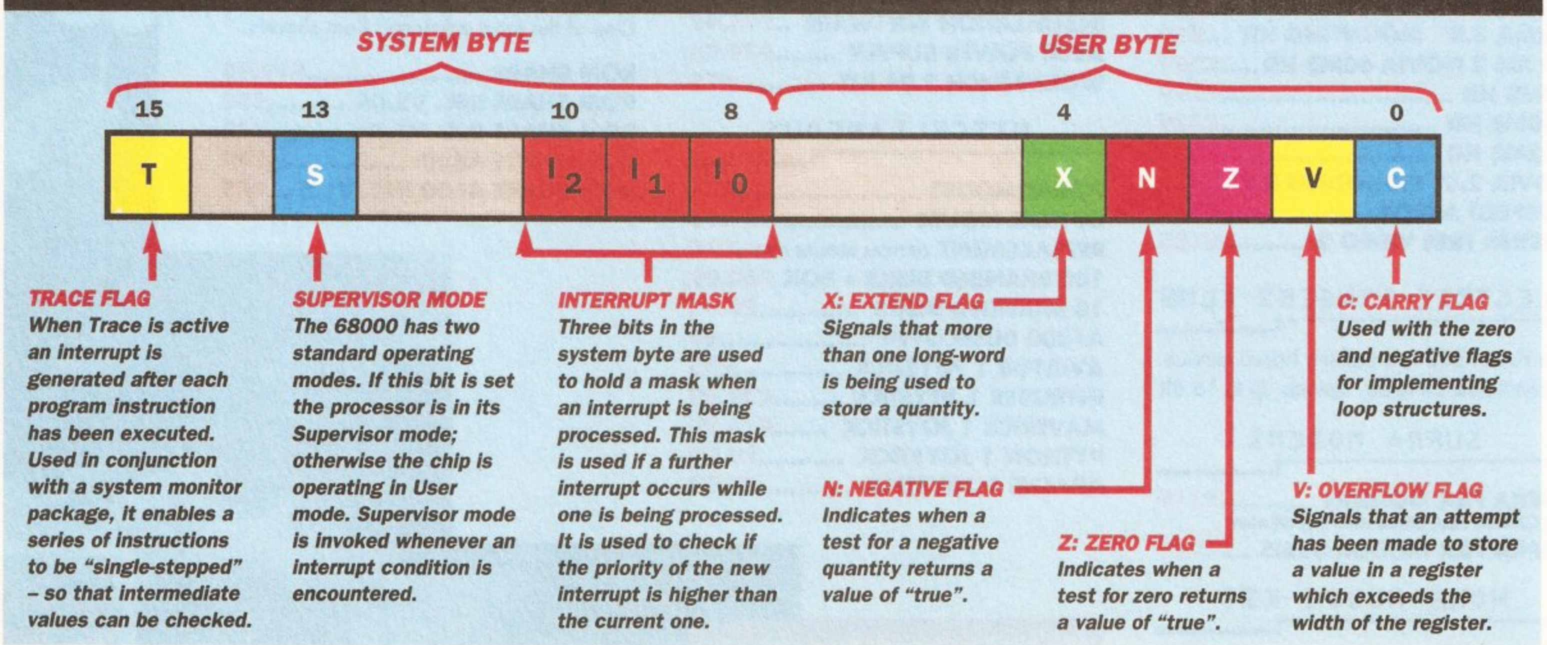
Once the interrupt handler instructions have been executed, the 68000 restores the original values to the Status register and Program Counter. It then clears the interrupt mask from the three interrupt bits I_0, I_1 and I_2 in the Status register – that is, it sets them to zero. Processing then continues from the point before the interrupt occurred – which appears to the user as a seamless transition.

Employing this method enables the 68000 to deal with nested interrupts – each time a higher priority interrupt is encountered the current Status register and Program Counter values are pushed onto the stack and control is transferred to the correct interrupt handler.

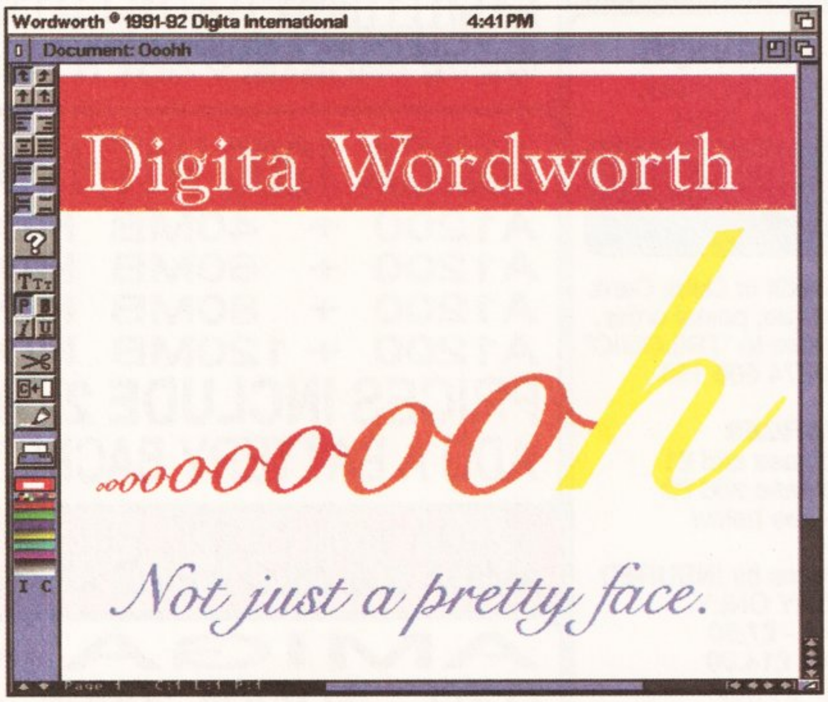
NEXT MONTH

In "Amiga Exposed" next month we'll be moving away from the workings of the 68000 and starting to examine the detailed function of the Amiga's custom chips such as Gary, Paula and Denise. AS

STATUS REGISTER



Nine reviewed One winner*



* Word processor roundup, Amiga Shopper, May 1993

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Stretch your imagination

Pixel 3D Professional: does Axiom Software's major overhaul of their 3D object manipulator really make the grade? Gary Whiteley makes a few points of his own.

Here's the problem: you've found a 3D object that is exactly what you need for your latest Amiga 3D animation, but it's in a format your favourite renderer can't understand. What do you do? The simple answer is to convert it into something your software *can* understand.

But it's not so simple. First, there are many kinds of 3D objects out there. Even on the Amiga there are at least a dozen different



The imperfect nature of PixPro's bevelling can be seen quite clearly in this LightWave 3D rendering. Note the small holes and defects on the front of the text.

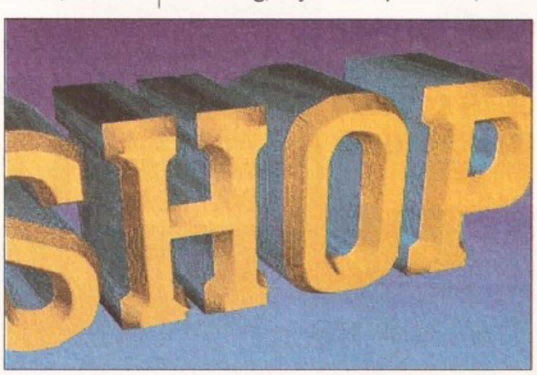
formats, most of which are not interchangeable. Second, there are objects from other platforms – PCs, Macs, and the big renderers such as Silicon Graphics workstations. And finally, different formats variously employ multi-sided polygons, spline patches or triangles as faces; such faces may or may not have colours and textures assigned to them; some faces are two-sided, while others only have an "outside"; some objects are "groups" of component parts.... Writing a conversion program could be rather a challenge.

But there are some. The first was *Interchange* (by Syndesis), but it was developed when there weren't so many different formats and it was eventually outgunned by Axiom Software's *Pixel 3D* (reviewed in *AS* 13). Since then, both packages have been updated, and the results are *Interchange Plus* (which we'll look at in due course) and *Pixel 3D Professional* (AKA *PixPro),* reviewed here.

FAST OR FASTER

Like its predecessor, *PixPro* comes in two versions, one for 68000 Amigas and an appreciably faster but otherwise identical version for accelerated machines. And like its predecessor, *PixPro* can import 2D bitmapped images and turn them into 3D objects which can then be smoothed, extruded, bevelled or spun – and many of these functions have been extended and improved.

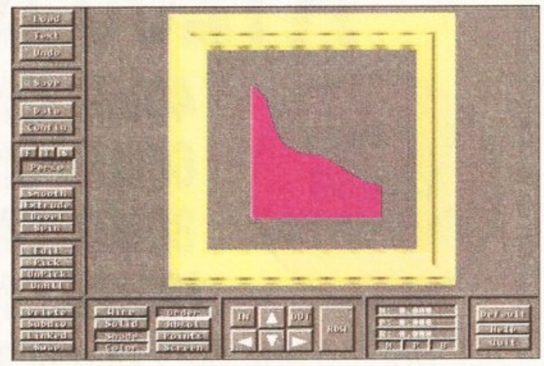
New functions include direct text conversion (though only from bitmap fonts); point-by-point object editing; front, side and top views (in addition to the very handy perspective view); custom "Router Bit" tools for bevelling; keyboard equivalents; more viewing options and – a much-needed addition – an **Undo** button.



The same sorts of defects in the results of PixPro's bevelling can be seen in this Imagine rendering.

The number of object load and save formats has been extended to include *Caligari, Wavefront, Digital Arts* and *Draw 4D Pro* (useful for *Aladdin 4D)* as well as the earlier *Sculpt3D, Imagine, LightWave 3D, Turbo Silver, VideoScape 3D, DXF AutoCAD* and *3D Pro* formats. *PixPro* can also load (but not save) *VistaPro* and *Scenery Animator* DEM formats.

PixPro sports a redesigned interface and improved load/save requesters, though it still cocks a snoot at PAL users and retains its NTSC-size display. All functions are accessed via on-screen buttons or pop-up menus; *PixPro* has no pull-down menus at all.



Objects like this picture frame can be easily made using custom "Router Bits". The purple shape in the centre is the router used to cut the elaborate bevel on the frame. Wonder if it sweeps up afterwards as well...

CONVERTING

At its most basic, *PixPro* is very easy to use, though you won't get the best out of it unless you are prepared to do some extensive fiddling. If all you need is to convert a few objects then it can be as simple as loading them up and saving them out in the chosen format. But it will seldom be that simple, and there are many caveats to observe when converting objects from one format to another.

Remember what I was saying earlier about single- and double-sided polygons? Well, some object formats require the polygons to be oriented in the right direction as well, or else they may become invisible when rendered, resulting in unsightly holes in your precious object. It may also be necessary to reduce the number of polygons which constitute the object, or subdivide the polygons into more facets to produce better smoothing when rendered. This is all possible from the **Data** menu, though it will take some detective work to fully understand what's going on because the manual is generally too vague in this area (and others too).

Most bitmap conversions will be taken from two-colour hi-res IFF files, using the non-colour0 areas to build the object, though multi-coloured images can also be used (but not HAM, 24-bit or, presumably, AGA graphics). In the case of multi-colour conversions each colour can be directed to extrude to pre-set lengths by using the **Color** settings in the

VLabYC

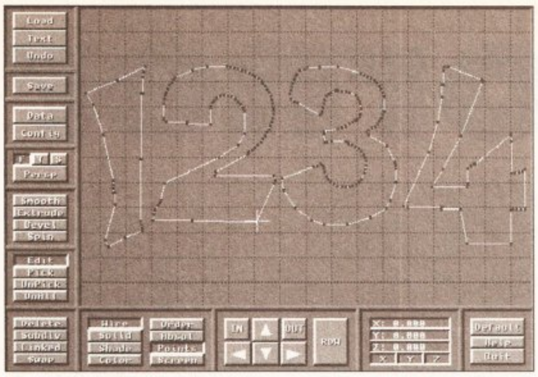
Regular readers of this column will be aware of my fondness for MacroSystem's excellent VLab digitisers. Now there's a new one – this time with a YC video input as well as the regular composite ones.

For those who are new to the digitising game here's a quick update. Digitisers are hardware devices which convert the video signals produced by cameras, video decks or laser disks into images which can be displayed on the Amiga and used by any software which can handle the resulting graphics.

There are two types of digitiser – slow scan (so-called because they scan images directly from the video input and convert as they go – which means they need perfectly still images to grab successfully) and fast scan (which continuously sample each incoming video frame into a special memory buffer and then use the sampled image for the grabbing source, meaning almost instant grabs).

Like the other Vlab cards, VLabYC is a fast-scan digitiser, and its framebuffer technology means that it can grab good-looking images from almost any video source, moving or static. It fits into one of the Amiga's Zorro II slots and the only other connection it needs is a video input.

Once again, the software (now v3.1) has been updated and



Creating font-based objects is one of the exciting new possibilities offered by Pixel 3D Professional...

Extrude menu.

Once an image has been converted, the edges can be smoothed to reduce the jaggy effect caused by converting a bitmapped image into 3D vector points. The smoothing menu contains a lot of control functions to help achieve a favourable smoothing, but to make it easier there are three pre-set default settings (small, medium and large) to get you started.

After smoothing there is **Extrude,** which turns a "2D" object into a 3D one. Of course you can always extrude the flat object in your 3D software, but extruding in *PixPro* is easy, usually just a simple matter of entering the extrusion length you require, though the axis offsets and the colours of front, sides and back faces can also be controlled.

My favourite operation is bevelling – or at least it would be if it always worked correctly. Bevelling is where the square edges between the front and sides are cut off at an angle to leave the front joined to the sides by a bevelled face, a swish effect to add to text. New in this version is the ability to bevel both the front and back faces (only the front was possible previously) and there's a new option to enable you to design your own tools to determine the shape of the bevel. This means you could make a curved tool to give a curved bevel, or a complex tool to give the appearance of an ornate picture frame, for instance. The trouble is that small holes are sometimes left after bevelling – and these can be pretty obvious when rendered.

The last option is **Spin,** which can rotate an object around any axis by any number of degrees, giving an easy way of making spiral, cylindrical and other related objects.

A nice touch is that it is possible to link the **Smooth, Extrude** and **Bevel** functions together so that they work automatically to affect any incoming bitmap or object. If you are after a specific result (for instance smoothing a bitmap, extruding it to 50 units and then custom bevelling it) all you need do is set the relevant parameters and save a new configuration file. Reload this config at any time before importing a new bitmap or object to repeat the desired effects. Some extremely difficult shapes can easily be created using **Router Bit** bevelling.

As far as converting objects from one format to another goes, I found *PixPro* to blow hot and cold. The first version of *PixPro* I was sent produced *Caligari* objects which *Caligari 2* refused to recognise (though this problem was cured by a later release), while the **.dxf** file I imported was thrown out by *PixPro* for being unrecognisable as a DXF *AutoCAD* file. I couldn't get hold of either *Wavefront* or *Digital Arts* objects to test, but *Imagine* grouped objects seemed to work okay, as did *Sculpt 3D, LightWave, VideoScape* and *Draw 4D* objects – both for input and output, though there were instances where certain properties (colours, textures) would be lost and some corrective surgery became necessary in the respective 3D program. However, I can sympathise with some of these problems – it is well-known that some "standard" formats often aren't, and it may be that *PixPro* is trying to make the best of a situation which is not of its making.



...And the program gives you plenty of choice as to how you view the objects you are working on.

Requirements: Any Amiga with at least 1Mb Chip RAM. More memory is essential if you need to deal with all but the smallest objects. An accelerated Amiga will provide much faster processing.

SHOPPING LIST

Pixel 3D Professional £144.99
by Axiom Software
From Micro-PACE UK Ltd,
Unit 10, Perth Trading Estate,
Perth Avenue, Slough,
Berks. SL1 4XX.
☎ 0753 551888.

CHECKOUT PIXEL 3D PROFESSIONAL

Quality ●●●○○
Variable, depending on input/output formats and other circumstances, but this is not necessarily entirely *PixPro's* fault.

Documentation ●●○○○
Dull, dry and lacking in detail. And not a single illustration!

Ease of Use ●●●○○
Neither the manual nor the on-line help contributes much to making the program any easier to use. At basic level it is easy to master, but for the more demanding user (and that would certainly include the professionals that *PixPro* is presumably aimed at) the unexplained complexities of the program often just confuse.

Value for Money ●●●○○
Pixel 3D was overpriced and *PixPro* is no better value for money – perhaps because it has little in the way of competition.

Overall rating ●●●○○
A brave yet flawed attempt to make an all-round bitmap, text and object converter and processor, but it doesn't quite make the grade. Some of *PixPro's* features may still be the best, but others could be considerably improved. By no means a failure, but *PixPro* has yet to mature into the great program it could so easily be.

improved and it can now display grabbed images directly to MacroSystem's own Retina card, as well as Amiga Centre Scotland's Harlequin board, and also use the Retina for full-colour monitoring. Other improvements include significantly faster monitoring, grabbing and conversion, full support for the AA graphic formats and the option of Floyd-Steinberg dithering for better-looking images at lower resolutions. There are also new loaders and savers for ASDG's *Art Department Professional*, enabling VLabYC to be controlled directly from *ADPro* and the VLab's native YUVN format grabs to be imported directly for further processing and compositing.

If you want a fast, high-quality grabber with YC capability, you should seriously consider VLabYC – at least until we discover just how good Rombo's new Vidi-24 is.

Requirements: Amiga 1500, 2000, 3000 or 4000 with at least AmigaDOS 2, 1Mb Chip and 2Mb Fast RAM. A hard drive is highly recommended. You'll also need a suitable video source and cables. An accelerator and display card (such as Retina, Harlequin, Opalvision) may also be very useful.

SHOPPING LIST

VLabYC £381.88
By: MacroSystem
From: Amiga Centre Scotland,
Harlequin House,
Walkerburn, Peebleesshire,
Scotland, EH43 6AZ.
☎ 0896 87583.

CHECKOUT VLABYC

Quality ●●●●●
Excellent – provided the incoming video quality is at least half-decent.

Documentation ●●●●○
Now in English! (Well, as near as it will ever be.) Thorough, informative and useful, though the binding is rather poor.

Ease of Use ●●●●○
There's not much that would make VLabYC easier to use.

Value for Money ●●●●○
Even though it is quite expensive, in my opinion there is currently nothing to touch it – though the competition appears to be closing fast.

Overall rating ●●●●○
For better quality than ever, VLabYC provides fast, high-quality framegrabbing.

SEAMLESS SEQUENCES

At the recent *Amiga Format Live* Show at Wembley, MacroSystem displayed a beta version of a new product which enables the VLabYC digitiser to grab complete sequences of images from videotape and store them on hard disk for later manipulation and playback. Using either a VCR with an infra-red controller or serial connector, the sequencing software controls the video deck, playing the tape through several times and grabbing frames on each pass until it has got the entire sequence. Till now, this needed very expensive video equipment, a great deal of patience, or both.

The sequencer will eventually be bundled in the VLabYC package and should be available as a free upgrade for existing VLabYC owners. But note that normal VLab and VLab Par models will not support this function.

Genlock corner

Gary Whiteley tests the new GeneSys genlock from British company G2 Systems.

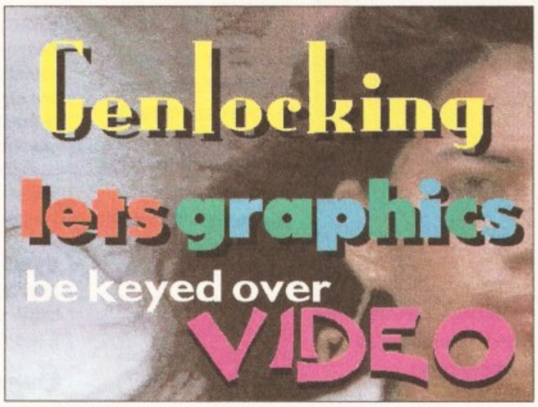
It's just under the £1,000 mark, but GeneSys has a lot in common with G2's earlier VC1 and VC2 genlocks, being dark grey, wedge-shaped, well-designed and solidly-built. The picture selection and mixing controls are all on the top panel, and on the rear are all the various connectors for composite video, Amiga RGB input and output, power supply, remote control attachment (optional extra), key output (also optional) and, at long last, YC connections – which means S-VHS or Video-8-style inputs and outputs. There's also a switch for selecting between composite and YC operation.

GeneSys doesn't pass the full genlocked video signal to the Amiga monitor, just the Amiga's own RGB signal, so to see your genlocked Amiga graphics over video you need a second monitor – but this is unlikely to be a problem in a professional environment since the recorded signal, as well as the various signal feeds, will normally be monitored separately anyway.

For flexibility the GeneSys has a switch to select which of three basic video signals is output to video: **Amiga Key** (graphics superimposed over video – in other words "genlocked"), **Background** (video only) and **Amiga Mix** (Amiga graphics only). Depending on how the switch is set, the two faders can be used either to fade the image to black (**Amiga Mix** and **Background** only) or to fade the keyed graphics up and down over the video image as well as fade the entire image to and from black (**Amiga Key** only). The faders are very smooth and have a long travel distance, which makes smooth fading very easy.

There's also a set of dip switches on the back to enable you to select which of 16 Amiga colours is to be the key (or genlock) colour, giving more flexibility than the ubiquitous Colour0 keying provided by many less expensive genlocks. Note that this feature doesn't work when the GeneSys is connected to an OpalVision card, though normal genlocking works perfectly.

Once the GeneSys has been connected to both the Amiga and the relevant video feeds, its operation is simplicity itself. Load some Amiga graphics, find the video images and then mix the two together, fading as necessary. That's all there is to it.



The picture does the talking. A GeneSys will give you video and graphics in perfect harmony.

But what if you only want to record Amiga graphics to videotape, not key them over video? Well, this isn't a problem, because, unlike some genlocks, GeneSys can generate its own internal synchronising signals (instead of deriving them from the incoming video signal) in order to provide a stabilised Amiga output – though you could still provide a video signal or house sync feed if you felt so inclined, which could possibly improve the quality if it provides a better sync pulse than the internal generator's.



This shiny new genlock from G2 offers high-quality genlocking for pro and semi-pro users at under £1,000.

One advantage of the GeneSys is that it uses separate encoders for each video signal, one each for YC, composite and RGB, all of which means higher quality because the YC signal isn't first being converted to composite and then back to YC after processing (as is reputed to be the case with some cheaper genlocks).

As usual, a genlock will only reflect the quality of the video signal it is fed, with poor inputs (for example old or damaged videotapes or poorly-edited and poorly-recorded material) leading to undesirable effects such as unstable genlocking, wobbling images, loss of colour and, in the worst cases, even completely unviewable pictures. Fortunately, GeneSys copes well with many of these potential disaster areas, but it still pays to provide the best quality video inputs you can.

I tested the GeneSys with composite inputs from a domestic VHS deck and a low band U-matic VCR, and also with the YC output from an S-VHS camera. The composite signals showed a little noise and fringing in some areas (which is nothing unusual for composite video, I might add, especially with bright colours), but the YC inputs fared much better, as is only to be expected. In any case, the images provided by the GeneSys were of high quality (even the VHS was better than average) and I could find no evidence of the Amiga/video bleed-through evident in the first batch of GeneSys to be released, a problem which was very quickly tracked down and, let's hope, banished forever after some timely changes were made to the system's electronics.

The GeneSys is a top-quality genlock, but it seems pricey compared to some competitors. G2 do throw in extensive after-sales support, and they offer existing owners of G2 genlocks attractive upgrade deals (it's only about £300 to trade in a VC1 for a GeneSys), but the GeneSys may unfortunately still be priced too high for many would-be buyers. Only time will tell.

Requirements: Any Amiga (though a special RGB cable is needed for Amiga 1000s). Standard RGB cable and power supply are supplied. AS

Gary Whiteley can be contacted by email as drgaz@cix.compulink.co.uk.

JARGON BUSTING

Composite Video: A video signal which combines colour, brightness and synchronising information. Commonly produced by camera and VCR outputs; used in editing VHS, U-matic and other tape formats.

Genlocking: A way of getting several video devices to run in perfect sync, enabling clean vision mixing and the overlaying of Amiga graphics onto video images (in part by using the genlock to synchronise the Amiga to the video signal).

YC Video: A video signal which is less common and more specialised than composite video. Usually provides superior quality because the brightness (Y) and colour (C) components are processed separately and do not need to be decoded from a mixed signal first, meaning less quality loss.

SHOPPING LIST

GeneSys genlock £934.13
From: G2 Systems, 5 Mead Lane, Farnham, Surrey, GU9 7BR.
☎ 0252 737151.

CHECKOUT
GeneSys genlock

Quality ●●●●○
Well built and with good all-round output quality.

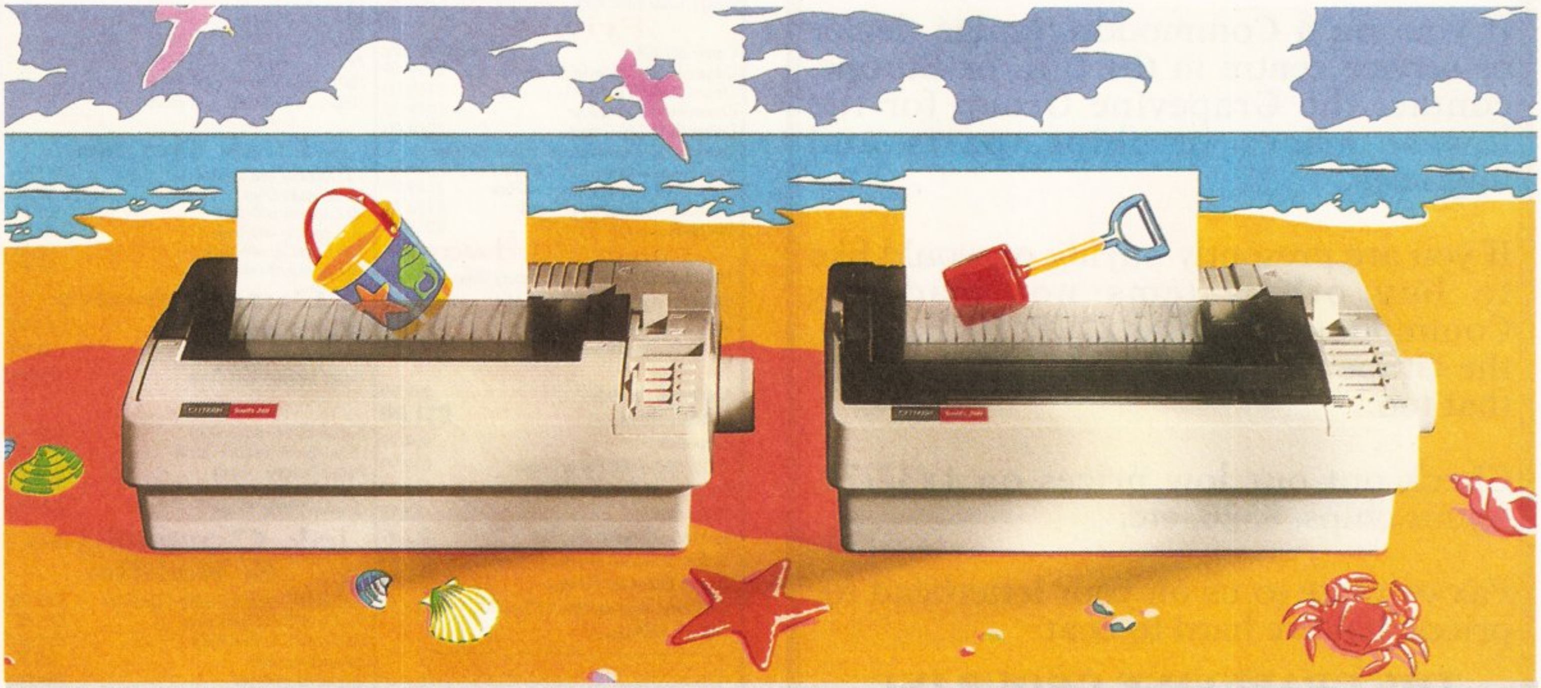
Documentation ●●●●○
A few connection diagrams would have been nice, but otherwise all the necessary info is there.

Ease of Use ●●●●●
Very simple to use.

Value for Money ●●●○○
A little expensive for many potential users.

Overall rating ●●●●○
GeneSys is a high-quality, no-frills genlock which should perform well under most circumstances, in addition to being able to take the punishment that a professional environment can produce.

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DTP This is the icon you'll find next to queries related to the whole area of desktop publishing.

MONITORS Questions about monitors, including television display problems, will feature this icon.

HARDWARE This icon's for queries relating to general hardware, excluding kit covered by other headings.

BUYING This icon indicates a question asking for buying advice in any area, hardware or software.

PRINTERS If a query concerns printers, printer drivers and hardcopy problems, this is the icon you'll find.

CODING Questions about coding (no matter which language) will have this icon next to them.

VIDEO This one's for queries about using your Amiga with video hardware such as genlocks or digitisers.

MUSIC This icon is for questions about MIDI, sampling, synthesizers and music software.

SOFTWARE Queries about specific software packages or programs have this icon next to them.

COMMS If your question relates to comms, including modem problems, this is the icon we'll use.

NO PROBLEM!



Gus Chandler coordinates the Amiga Answers experts. And the strain isn't even showing...

Welcome to another fact-packed ten pages of Amiga Answers. This is the section of the magazine that's dedicated to solving *your* Amiga computing problems. But more than this, while we always seek to provide definitive replies to individual readers' queries, we'll also set the answers in a wider context. This means that you should find our advice helpful even if you've got only a passing interest in a particular subject.

To help us keep the Answers section the most informative and vibrant problem-solving section of any Amiga magazine, we call on a panel of Amiga aces – all experts in their fields – to sort out all those technical teasers that have had you baffled. So, if you've got a recalcitrant monitor or want the lowdown on genlocks, we'll put **Gary Whiteley** on the case. If your disk drive makes a painful sort of grinding noise or you're not sure why typing the AmigaDOS command "`DELETE DF0:#? ALL`" can be fatal, then **Mark Smiddy** will set you straight. **Jason Holborn** is our house-trained AMOS guru – he's the man to explain that a copper list isn't a drunken constable. If you're having trouble getting your modem to speak to the outside world, or want the lowdown on baud rates, then **Dave Winder's** words of wisdom will soon have you sorted. Perplexed by a programming problem? Then our code clinicians, **Toby Simpson** and **Paul Overaa,** will rapidly debug it. Having headaches with hardware? Then we'll get **Jolyon Ralph** or **Wilf Rees** to handle it – Jolyon's also the main man when it comes to CDTV.

Right, that's our panel – now it's up to you to tax their grey matter. Just keep those problems rolling in. Please don't send us an SAE with your letter though – we simply receive too much mail to provide an individual reply service.

Gus Chandler

If you send in a question for the Amiga Answers experts, please fill in and include the form below (or a photocopy if you don't want to cut up your magazine). And please also make sure that you include all the relevant details – version numbers of software and so on – so that we have the best chance of helping you.

Send your form and question to: Amiga Answers, *Amiga Shopper*, 30 Monmouth Street, Bath, Avon BA1 2BW. Sorry, but we cannot reply personally to any questions – even if you include an SAE.

Name: ______________________

Address: ______________________

____

____

Your machine:

A500 ❑ **A500 Plus** ❑ **A600** ❑ **A1000** ❑ **A1200** ❑

A1500 ❑ **A2000** ❑ **A3000** ❑ **A4000** ❑

Approximate age of machine: __________

Kickstart version (displayed at the "insert Workbench" prompt)

1.2 ❑ **1.3** ❑ **2.x** ❑

Workbench revision (written on the Workbench disk)

1.2 ❑ **1.3** ❑ **1.3.2** ❑ **2.x** ❑ **3.0** ❑

PCB revision (if known). Do not take your machine apart just to look for this! __________

Total memory fitted (see AVAIL in Shell for Workbench 1.3) __________

Chip memory available (see AVAIL in Shell) __________

Agnus chip (if known) __________

Extra drive #1 (3.5in/5.25in) as DF_: Manufacturer __________

Extra drive #2 (3.5in/5.25in) as DF_: Manufacturer __________

Hard disk: ____Mb as DH__: Manufacturer __________

Extra RAM fitted – type, size in Mb and manufacturer __________

Details of any other hardware which could help us to answer your question:

____

____

____

____

Now, use this space to describe your problem, including as much relevant information as possible. Please continue on a separate sheet if necessary.

____

AS 29

ARPING ON AND ON

GENERAL

I am 72 years young and recently acquired a GVP A500HD+ for my A500. I have managed to transfer most of my software from floppy disk to hard disk using the installation software, and, where appropriate, by creating drawers and dragging items from floppy to the hard disk. My two problems to date are as follows:

1. Everything I transferred from the Extras1.3 disk works except the demos drawer. When I open it nothing in the window will load. I just get a flash on the screen with no information as to what's wrong.

2. I have transferred a PD labelling program from floppy disk and every time I try to use it get a message that reads: "You really should use the ARP..." and when I continue, I find the program still runs but with the following changes: the default font (previously Courier/10) has become Diamond/12 and my beloved Helvetica font is not there at all. I have compared hard and floppy directories using *SID* and everything seems to be there, including that elusive Helvetica font. What's up, doc?

Ian Higgs
Enfield
Middlesex

This is a puzzle but I suspect you are putting too much trust in *SID*, the directory utility. There's nothing wrong with *SID* in itself, but like any tool it is only as good as the operator. (Personally, I found it much too complicated!) Let's have a look at these two in context.

1. I really cannot explain these – although it sounds as if you have copied the icons for the demos only and not the tools themselves. You should be able to rectify this by simply dragging the **Demos** drawer from the **Extras1.3** disk to the hard disk. Better still, boot from Workbench, place **Extras1.3** in the internal drive, open the Shell and enter this command:

Note: the symbol ☛ in listings means do not type a return – the line is simply too long for our narrow columns

```
COPY DF0:#? SYS: ALL
```

That will copy absolutely everything from the **Extras** disk and put it in the correct place. You can get rid of the Shell by entering this:

```
ENDSHELL
```

2. This one is more interesting and suggests you have only copied the fonts from the Workbench disk, not the extra fonts (Courier, Helvetica and Times) from the **Extras1.3** disk. The procedure outlined above will see to that automatically. You may also need to run *FixFonts* (in the **System** drawer) to ensure the system knows what font changes have been made.

As regards the message about ARP. This is an extra and very useful library of routines that can be used by other programmers. It is less useful to owners of 2.0+ machines because all its functionality has been incorporated into the operating system. That doesn't help you, I'm afraid.

You can solve this one by starting *SID* (you should do this from hard disk) and copying the file **ARP.LIBRARY** from the **LIBS** directory of that PD disk to the **LIBS** directory on your hard disk. Once you've done that, I think you'll find the problem disappears as if by magic. Neat, eh? ***MS***

A FONT FOR FOUNTAIN

BUYING

Regarding the query about *Fountain* from E J Storey in *AS* 24, I too have exactly the same problem. Every time I try to open *Fountain* I get the message "Cannot open diskfont library v37". I have tried all my program disks that have diskfont.library on them, but they all show the version as 36.66. Nobody I know has version 37 and I despair of getting it.

Please, please, could you be more specific as to where version 37 of diskfont.library can be obtained? Perhaps you could even include it on a cover disk?

E T Maguire
Bude
Cornwall

Sorry, can't put it on a cover disk because it belongs to Commodore and that would be a breach of copyright. Software manufacturers pay a licence fee to Commodore to get permission to distribute various Amiga "system" files on their program disks.

Your best option is to upgrade to Workbench 2.1. You don't need the full "enhancer" kit with the Kickstart 2 ROM, just the smaller and cheaper kit that comes with the five Workbench 2.1 disks and the four manuals on Workbench, AmigaDOS, ARexx and Hard Drives. It costs about £60, has a number of important improvements over Workbench 2.04 and 2.05, including some decent manuals for a change, and is well worth the small effort of upgrading, which will be even less work since you have a hard drive. You might try White Knight Technology ☎ 0992 714539. ***JW***

#*/$ KEYBOARD

HARDWARE

I have recently got an A1200 with Workbench 3. Although the machine appears to be working okay I have noticed that several keys seem to be in the wrong places. According to the Workbench manual I have to select the correct keyboard using the Input Preferences. The screenshot in the manual lists many countries, but on my disk only American is shown. I have tried a friend's Workbench 3 disks and they give the same result. A cover disk of Maxiplan 4 shows the correct symbols!

Ralph Crosby
Sunderland
Tyne-and-Wear

There appears to be a bug in two preferences editors which manifests itself in them mis-reading the real **PRINTERS:** and **KEYMAPS:** assignments when you change between the **Extras 3.0** and **Workbench 3.0** disks. The solution is thankfully quite elegant, although it does require some modification to the startup-sequence, so only work on a copy of your Workbench disk. Now, boot your machine and follow these instructions.

❶ Double-click on the icon marked **Shell** – you'll find it in the System drawer. The Shell window opens with a prompt like this:

6.Workbench3.0>

❷ This means the Shell is ready to accept your instructions. Type the following carefully and press [Return] or [Enter] at the end of the line:

```
ED S:STARTUP-SEQUENCE
```

❸ This opens a simple editor program which is supplied as part of AmigaDOS. The instructions on your screen are a list of AmigaDOS

FONT OF ALL WISDOM

COVER DISK CG FONTS

SOFTWARE

How can I get the Compugraphic fonts from your first cover disk *[Amiga Shopper* 21] to work with *PageSetter II* on my Amiga 1200? I have successfully unarchived them and copied them to the CGFonts directory on the *PageSetter* disk, but they weren't available within *PageSetter* when I rebooted.

Andrew Bainbridge
Darlington
Co Durham

You can't. For each Compugraphic font, *PageSetter II* requires four files to be present in **CGFonts:** – **fontname.lib, fontname.metric, fontname.dat** and **fontname.atc.** Our cover disk didn't have the **fontname.atc** files on it.

You see, a while back Gold Disk changed the way their programs work with Compugraphic fonts, consequently disposing of the need for the **fontname.atc** file. And Gold Disk's *FontManager,* the program that converted these fonts from PostScript format, doesn't create the **fontname.atc** files because all their "current" products, including *PageSetter 3,* don't need them.

The one answer is to avail yourself of the special £30 *PageSetter 3* upgrade being offered "for a limited time" by Silica Systems ☎ 081 309 1111.

A FONT CALLED ILLEGIBLE

SOFTWARE

While I was very pleased that *Amiga Shopper* has taken to providing a cover disk, I am having difficulty installing the Compugraphic fonts that were on it for *Professional Page 3.0.*

I have successfully unarchived the fonts to a disk and copied them to the relevant directory. But although the fonts appear in *Professional Page's* typeface requester, when rendered on to the screen the appear as squares with little letters in the bottom left hand corner. This is true of each of the Compugraphic fonts on your cover disk, at all sizes.

Ian Douglas
Peverell
Plymouth

A fair number of readers had the same problem, Ian, so you're not alone. However, as it happens, the solution is simple. (And had you read your *Pro Page 3.0* Supplement Manual you wouldn't have needed to write to us.) After copying the font files into **CGFonts:** you must then run the *CG_Update* program that is supplied with *Professional Page 3.0.* ***JW***

instructions that the machine executes every time it is switched on. Don't worry about what it all means, just press the down arrow key until the little blue box (the cursor) is at the start of the following line:

```
Assign >NIL: KEYMAPS: ☛
DEVS:Keymaps
```

❹ Now move the cursor right until it is one space past the end of the line. [Shift-right Cursor] has much the same effect. Once you've done that, enter this:

```
PATH
```

so your line now looks like this:

```
Assign >NIL: KEYMAPS: ☛
DEVS:Keymaps PATH
```

❺ Move the cursor back to the start of the line and up to the line that reads:

```
Assign >NIL: KEYMAPS: ☛
DEVS:Printers
```

❻ Follow the instructions at Step 4 until the line reads like this:

```
Assign >NIL: PRINTERS: ☛
DEVS:Printers PATH
```

❼ Hold down the right mouse button and select **SAVE** from the **Project** menu. (Your Workbench disk must be write-enabled to do this.)

❽ Re-boot the machine and you should now find the problems have been solved as if by magic.

Technically speaking this bug-fix creates a non-binding assignment which must be read every time the relevant preferences editor attempts to read either **PRINTERS:** or **KEYMAPS:**. Since **DEVS:** is already bound to **SYS:Devs**, this means any reference to the assignment always forces a read from the boot disk. Phew! It was not caught during the testing phase because Workbench 3 was really meant for hard disk set-ups, or at least dual floppy drives. Fortunately, you don't have to understand how this works in order to be able to use it.

Your Maxiplan cover disk will not be configured for Workbench 3 in the same way and the Amiga is retrieving the correct keymap via a fallback mode. The road to change is not always a smooth one! ***MS***

FIRST AID NEEDED

I use my Amiga 1500 mainly for video titling and am currently making a first aid training video. As well as titles, I wish to add graphics and possibly animations. Do you know of any (commercial or PD) collections which may be suitable?

I will be replacing my Commodore A2301 genlock soon, because the rest of my system is S-VHS. Which genlocks should I consider? I am willing to spend about £1,000 at most. Picture quality is of prime importance, while wipe/fade features are non-essential – I use a Panasonic mixer for this task.
Andrew Duncan
Bridge Of Don
Aberdeen

I find your first question a little difficult to answer because you don't indicate what *kinds* of images you are looking for. Ambulances? People with their arms hanging off and blood everywhere? How to tie a sling for a dislocated shoulder? Mouth-to-mouth resuscitation? You see my problem?

Still, how about starting by checking through all the PD adverts you can find and also taking a look at one or two of the specialist video magazines such as *Camcorder User,* where there are often adverts for commercial art libraries and tapes for Amiga users. You'll then have to do some detective work yourself, calling or writing to any that look suitable to ensure that they carry the product you need. But I wouldn't be too hopeful – you are working on a very specialised subject and you may find that you may have to commission the graphics (and animations) specially for your program. Alternatively, you could always try to do them yourself, if you are confident in your abilities as an artist.

Regarding my choice for an S-VHS genlock I'd suggest that you take a look at either Electronic Design's YC Genlock (£519.95 from Micro-PACE UK ☎ 0753 551888) or G2 Systems' new GeneSys (£934.13, reviewed on page 34 of this very issue). Both of these provide good-quality outputs, though in my opinion GeneSys is superior. Alternatively, Electronic Design are about to release a Video Converter card (£189.95) which, though not a genlock, outputs S-VHS, composite and RGB and may be suitable for supplying a signal to your mixer. Both the genlocks are external models, while the Video Converter fits in the video slot of Amiga 1500, 2000, 3000, 4000 models. ***GW***

MY MATE WORKBENCH

I used my old Amiga 500 and A590 hard disk satisfactorily for several years and on upgrading to an Amiga 500 Plus some ten months back expected to do even better. I have been disappointed in this.

On fitting the A590 to the new machine I found that I had no 2.04 version of the setup disk and asked my suppliers for this. They explained that this disk was available only with the upgrade kits and advised me to return my 1.3 setup disk to Commodore for reformatting. This I did, and after a long delay they sent me an A3000 version. I returned this and was sent a set of WB2.04 disks. I have had no reply to subsequent letters.

Now, being on my own, I tried reformatting the hard disk and copying WB2.04, Extras and Fonts to the 590, with reasonable success but no noticeable speed increase over the old A500. When I installed *Wordworth 2* everything worked well enough, but I discovered that I now had an enormous font library of 132 blocks. When I tried to delete some fonts the machine crashed and I had to restart from scratch.

On another point entirely, I have read that the hard drive should always be switched on before the computer, but in my trials the hard disk does not start until the computer is switched on. Is there, therefore, any danger involved in arranging both to start from the same switch?
J Herbert
Marlborough
Wiltshire

Your dealers were half-correct when they said that you could only get the 2.04 install disk from Commodore directly or in the upgrade kit. What they should have pointed out is that the 1.3 install disk you already owned was perfectly okay for setting up the hard drive with Kickstart 2.04 (which is why they are still supplied with the 1.3 disk).

The procedure for this is relatively simple. Boot with a Workbench 2.04 disk and put the A590 **Install** disk in your external drive. Now open the program *HDToolbox* and format the drive as explained in the A590 manual. Keep a note of the **Partition Device Name** as shown in the **Partition** menu – you will need that.

Save all changes and quit to Workbench. This may reboot your machine. Open a Shell and type:

```
sys:system/format drive ☛
DH0: name Harddisk quick
```

Change **dh0:** to match whatever partition name you set up previously. If you have more than one partition repeat this for each partition.

Then, type in:

```
Copy df0: DH0: all
```

Again, change the partition name if necessary. For multiple partitions you need only do this for the first partition.

Insert the **Extras** disk in **df1:** and type this line:

```
copy df1: DH0: all
```

Then do the same for the **FONTS** disk. Remove all disks and reboot your machine.

As to your second question, the A590 power supply is only turned on when the A500 power supply is active, so it is perfectly okay to switch both on at the same time.

And 132 blocks for fonts isn't so bad – that's only 66K (although that doesn't actually include the font data

continued on page 45

JARGON BUSTING

Clip art: Pre-drawn images on disk in a standard format, for import into your desktop-publishing pages.

Compugraphic fonts: Rather than a simple bit-mapped image of each character, which grows more jagged with magnification, a Compugraphic font represents the shape of each character within the font as a mathematical equation of the outline. Consequently, as the magnitude of the character is varied in printing, no information is lost and the result always looks smooth.

Genlock: A way of slaving one video source (such as an Amiga) to another (say, videotape) in order to synchronise their signals. This enables stable effects including overlay between the two sources.

Partition: Part of a hard drive separated off from the rest. As far as Workbench, AmigaDOS and the rest of the world are concerned, a partition is a disk in its own right. Problems do come to the fore when you try to copy data between two partitions on the same drive.

Sprite: A graphical shape, moved as a whole around the screen. The Workbench pointer is an example. Some sprites are manipulated by the Amiga's blitter chip, meaning that they can move very smoothly and rapidly, without erasing the information beneath them as they travel across the screen.

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Commodore 1942	14"	.28	MED	YES	DUAL	POA
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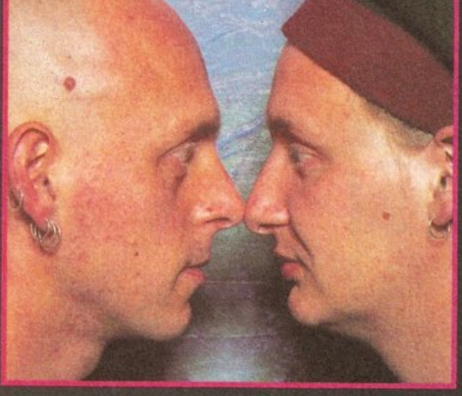
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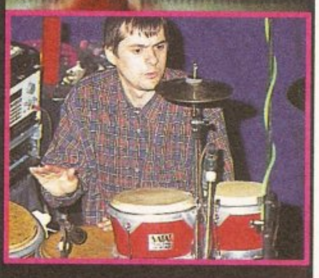
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continued from page 40

in the directories, only the **.font** files). My font directory contains 714 blocks, and that's after I've deleted all the fonts I don't want! ***JR***

MAZE MISERY

CODING

Using the "Maze Crazy" AMOS listing from *Amiga Shopper* 19 as a starting point, I have been trying to write a maze game. However, I'm having problems getting the sprites to position themselves within the maze correctly. Is there any easy way of ensuring that the sprites are drawn correctly into the maze and are also kept within the boundaries defined by the maze itself?
Mike Carey
Aberlady
East Lothian

Incorporating sprite control routines into the "Maze Crazy" code is somewhat easier than most AMOS programmers who have since used the code seem to think. Instead of relying on complex sprite collision and position code to control the sprites, you can make your life much easier simply by using the array that holds the map data (the data used to draw the map) as a guide. For example, if you want to position the sprite at position *2,2* on the maze, instead of calculating the sprite position yourself, why not just use the AMOS **X HARD()** function? Simply by checking the map data array, you'd know that the icon at position *2,2* was at screen position 32 pixels across and 32 pixels down. All you would then have to do is to convert this into a sprite co-ordinate (don't forget that sprite co-ordinates are not the same as screen co-ordinates) using a line such as:

```
SprXPos = X HARD(32) : ☛
SprYPos = X HARD(32).
```

Secondly, sprite movement is very easy to control too. All you do is whenever the player tries to move a sprite in a particular direction, check the map data array to see if a wall block is present. Say, for example, the sprite was at position *4,2* and the player had tried to move the sprite up. To check to see whether this is a valid movement, you would check the block immediately above the block the player is currently standing on – in this particular case, you'd check block number *4,1* (*X=4* and *Y=1*). ***JH***

DRIVE, HE SAID

HARDWARE

1. I bought a surplus 40Mb hard drive to replace the 20Mb XT drive in my A590 drive. The new drive is a

COMMS COMMANDS CORNER

COMMS

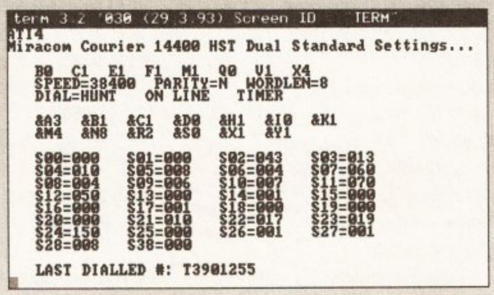
I know that "V" numbers are related to modem speeds, but what speed is V42bis? Also, what is meant by "Hayes Commands"? Finally, why are so many BBSs engaged even at 2am? Surely they can't be that busy at that time, not all of them.
Bob Pollison
Croydon
Surrey

You are of course quite correct in your assumption that most V numbers relate to speed, but V42bis is an exception to the rule. V42bis refers to a method of data compression which is implemented by your modem on the fly. Using V42bis it is possible to greatly enhance the speed at which files can be transferred.

In answer to the second part of your question: I hope that you're sitting comfortably because here goes with a potted history of Hayes. D C Hayes were one of the first manufacturers of modems that connected directly to the telephone system, as opposed to the earlier ones that used an acoustic coupler. In 1978 Hayes introduced their range of modems to North America and basically ever since then the Hayes standard has become *the* standard for everyone. The Hayes Command Set enables your terminal software to speak to your modem, and control it, without having to worry about any external control system. It therefore makes a lot of sense that one standard system of commands should exist.

This set of Hayes Commands, while absolutely irreplaceable, is also the area that most people get stuck on when they are first trying to get their modems talking. The rule of thumb is to start off with the settings that the manufacturers have installed at the factory, because these will usually at least enable you to connect with a BBS, even if not at optimum performance. The fine tuning is what really stumps a lot of folk. So let's run through some of the more popular and useful of the commands, explaining what they do and when you should use them.

To start with, nearly all of the commands begin with "AT". If you just type in **AT** from your terminal software, providing the modem is connected and alive, you will get a response of "OK". You should note that you don't have to enter the AT part of the command more than once when entering a long command string – for example, **ATM1DT0813901255** will send a command to the modem to turn on its audio monitor and then tone-

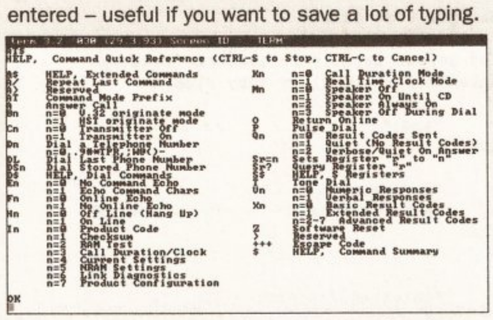


The command ATIn – in this case, ATI4 – is the enquiry command. Here's the reply Wavey got.

dial the Compulink Information eXchange number. (Most modems have a limit of 40 characters in the command string, not including the AT prefix, spaces, or carriage returns.)

Anyway, here are those important commands. Where an "n" is used, this shows that a numeric value is required – all is explained below.

- **A/** – This repeats the last command string entered – useful if you want to save a lot of typing.



Help on Hayes commands, but you need to know which command to enter to get to it. (It's AT$.)

- **ATDn** – This command starts the modem dialling. There are options which can be used with this command, and whichever you use must be entered in the string before the number you want to dial.

  ATDT – Tone dialling
  ATDP – Pulse dialling
  ATD, – Pause for four seconds before dialling
  ATD; – Return to command state after dialling
  ATDW – Wait for second dial tone
  ATD@ – Wait for an answer
  ATDR – Reverse mode (enables a modem to autodial an originating modem – in other words, to call a modem which does not have an auto answer mode)

- **ATDL** – Redial last number
- **ATDSn** – Dials the number stored at position **n** if your modem has a number storage facility.
- **ATEn** – This is the Command Mode Local Echo command – that is, it displays a copy of all modem commands entered at the keyboard back to your terminal, until a connection has been made.
- **ATH** – Used to hang up the modem at the end of a call.
- **ATIn** – This is the enquiry command, and you should refer to your modem manual for details of the options. Using my Miracom Courier HST Dual Standard modem I've entered ATI4 and the result is shown in the screenshot immediately to the left. A very useful command, this one.

- **ATMn** – Determines if the modem speaker is on or off, seeing that not all modems have a button for this.

  ATM0 – Speaker always off
  ATM1 – Speaker on until carrier established
  ATM2 – Speaker always on
  ATM3 – Speaker on until after last digit dialled but off at carrier detect.

- **ATO** – Return on-line after executing a command.
- **ATQn** – Enables or disables result codes. Result codes are useful because they tell you connect speeds, when you have connected, if there is no carrier and so on.
- **ATVn** – Determines if the above result codes are returned in the form of words or numbers.
- **ATZ** – This is a software reset, and will reset the modem to factory defaults.
- **AT$** – A very useful help facility which gives a basic rundown on the commands available (see the screenshot to the left).

And finally, those BBSs really are busy at 2am you know. Many BBSs form part of the FIDONET network of BBSs, and they swap files and mail around between each other at a set time each night. This tends to be between the hours of 2am and 3am in many cases, and that explains why you can't get through. Anyway, what are *you* doing up at that hour? ***DW***

Quantum P40S SCSI and seems to work very well, to a point.

The problem is when I ran the A590 startup disk, in the section HDToolBox, if I choose "change drive type" it asks for information I do not know – the number of cylinders, heads, blocks per track, supports re-selection, park cylinder, etc....If I select "read configuration from disk" no information is present.

I set everything as to the 20Mb and the cylinders at 612, but the drive formats and stops at 603 with an error and fails to format. I then reset the cylinders to 603 and retried and it did format, but in the partition section of the utility it will only give 39Mb maximum. The drive seems to work perfectly at these settings but I feel that given the proper information it may be improved. When I run "verify data on the drive" no errors are reported. Could you help with this information?

2. One other small problem I have encountered with my Amiga 500 Plus is that when a floppy drive clicks, the screen very slightly flickers. It also does this if a drive is reading data. My old A500 using the same monitor never did this.
K W Collings
Tyne & Wear

If the Quantum drive is not returning configuration information to your A590 then it is faulty. This may not affect operation, but if you bought the drive as new, I'd get it replaced.

39Mb is probably very close to the correct value the drive should report. There is a great deal of inaccuracy when dealing with hard drive capacity – for example, a 52Mb Quantum drive formats on an A590 to give 49Mb free. This is mainly due to different definitions of a megabyte. Some manufacturers quote a megabyte as being one million bytes, others refer to a megabyte as 1,024 x 1,024 or 1,048,576 bytes. So a drive with 52 x 1 million bytes is equal to 49.6 true megabytes. Also you will lose some data for formatting. The first two cylinders of the drive are used to store file system information, partition data, and so on. Setting up more than one partition can also result in wasted space, not to mention the significant extra RAM

CODE CLINIC CODE CLINIC CODE CLINIC

FOR A CHANGE, THIS ISSUE A READER HELPS TOBY SIMPSON DEBUG ONE OF HIS OWN PROGRAMS

CODING

Author:	**Toby Simpson**
Program:	**Timer device example**
Fault Summary:	**Won't assemble**

Well, this *is* embarrassing. Although the program back in *Amiga Shopper* 23 to demonstrate usage of the timer.device in assembly language works just fine, there are definitely some bugs in there, it must be said! *Amiga Shopper* reader Nick Norton of Swinton, North Yorkshire, typed in the program and had some problems getting *DevPac* to assemble it. While trying to figure out why his version wouldn't assemble, I spotted a definite bug in the program and a couple of minor things which ought to be changed.

First, as to why it won't assemble. When Nick tried, using *DevPac* 2.14, the assembler stopped, saying:

```
Error absolute expression
MUST evaluate at line 63
  63 01.00000010 Timer_IO:
ds.b IOTV_SIZE
```

IOTV_SIZE is an equate defined in the include file **devices/timer.i** which is equal to the size of the structure we require. It's always better to use named defines such as **IOTV_SIZE** rather than using actual numeric values. Quite apart from the fact that it makes your program more readable, it's a whole lot easier to debug, and if you discover you've been typing in the wrong one it's easier to track down all instances and change them.

Note: the symbol ☛ in listings means do not type a return – the line is simply too long for our narrow columns

I dug the source code up and tried to assemble it using *DevPac* 3.04, and it worked fine. So, I decided to check **timer.i.**

Nick quoted the line from his **timer.i** which referred to **IOTV_SIZE** as reading as follows:

```
IOTV_SIZE     rs.w   0
```

The same line in my includes (the 3.0 includes) reads:

```
  LABEL       IOTV_SIZE
```

This is a macro which assigns **IOTV_SIZE** to the current value of the assembler variable **SOFFSET.** It actually assembles to:

```
IOTV_SIZE:equu   ☛
SOFFSET
```

As you can see, this is certainly different from Nick's. I'm afraid I don't actually have any old includes to look at, but I suspect Nick's include files are quite old and out of date. *DevPac* 3 certainly assembles the program fine with the 3.0 includes. Having said this, the **rs.w** trick should work just fine. The **RS** (Reserve Space) directive can be used to define structure offsets. An example of its use might be the definition of a very simple list note which could be used to connect a whole bunch of things together:

```
  rsreset              ; Reset ☛
the counter to 0
f_previous     rs.l    1
f_next         rs.l    1
f_flag         rs.b    1
f_SIZEOF       rs.b    0
```

This would define **f_SIZEOF** as being 9, **f_previous** as 0, **f_next** as 4 and **f_flag** as 8. We could use these as offsets now in our structure.

If we had a pointer to one of our list notes in **a0,** we could now find the next node and put that in **a0** using:

```
 move.l       f_next(a0),a0; ☛
Fetch pointer to next node.
```

And so on. This is a whole lot more

JARGON BUSTING

AGA – Advanced Graphics Architecture. The "double-A chipset" as found in the A1200 and A4000 computers.

ECS – Enhanced chipset. This is found in the A500 Plus, A1500, A2000 and A600 computers.

MMU – Memory Management Unit. This is part of a lot of modern microprocessors, and is built into the 68040 chip and most versions of the 68030 (except the 68EC030 found in the A4000/030). For programmers, it can be used to trap illegal accesses to memory and prevent them, with the aid of a debugging tool called *Enforcer.*

```
Listing 1 - Flashing the display example:

;
;  Amiga Shopper Code Clinic -
;
;  Flash the screen legally in assembly language
;  using intuition.library. By Toby Simpson
;
   incdir      "inc:"                  ; This ☛
should point to your incs.

   include     "exec/exec.i"
   include     "exec/funcdef.i"        ; You may ☛
not need this
   include     "exec/exec_lib.i"

   include     "intuition/intuition_lib.i"
;
; — Library access macros ....
_EXECBASE:     equ     $04             ; ☛
exec.library base.

SYS:  macro
   move.l      _EXECBASE,a6
   jsr         _LVO\1(a6)              ; exec.library
access
   endm

INT:  macro
   move.l      IntBase,a6
   jsr         _LVO\1(a6)              ; ☛
intuition.library access
   endm

;
;
; — Code to flash screen ....
   section     disp_beep_code,code

START: lea     IntName,a1
   moveq       #$00,d0                 ; Version ☛
irrelevant
   SYS         OpenLibrary
   move.l      d0,IntBase
   bne.s       DP_Int_Ok
   moveq       #$00,d0
   rts                                 ; Return.
;
; — We open intuition, display beep and quit ....
DP_Int_Ok:     suba.l a0,a0            ; Flash ☛
every screen.
   INT         DisplayBeep
;
; — Close library and quit ....
   move.l      IntBase,a1
   SYS         CloseLibrary
   moveq       #$00,d0
   rts
;
; — Data storage for this program ....
   section     disp_beep,data

IntName:       dc.b   "intuition.library",0
IntBase:       dc.l   0

   END
```

loss for multiple partitions.

The true settings for the Quantum P40 are:

FileName: drive definitions
Manufacturer's Name: QUANTUM
Drive Name: P40S
Drive Revision: <not important>
Cylinders:
Heads:
Blocks Per Track:
Reduced Write Current & Write Precomp
should be ghosted, so you cannot change them.
Park head where (cylinder):
Supports reselection:

To decide this, check the ROMS in your A590. If you have below Rev v6.6 then this should be turned off. If you have v6.6 or higher then turn reselection on. Either way it isn't terribly important unless you have more than one drive.

Your floppy drive problem seems to be interference from the drive electronics, either on the drive itself or inside the computer from the drive support circuitry. This sort of problem is almost impossible to trace without swapping out components to see if the problem goes away. ***JR***

B-B-B-BUSY LINE

COMMS

I'm having problems with my Supra FaxModem, ever since the power supply failed during a call. After getting a replacement PSU I found I couldn't dial out. A trip back to the shop and the modem worked fine with their PC. All went well until the PSU broke again, and the problem returned.

How can I get information from the modem via my terminal software? If I send AT&V this should return the configuration profiles, but where does the information go? Any help would be appreciated.
J M Smith
Carlton
Nottingham

First, there have been quite a lot of reports about power supplies failing on the Supra FaxModem. If the PSU fails again, return to your supplier and make sure they give you a higher rated supply. It sounds like the modem had its factory defaults reset when you took it back to the shop, which is why things worked okay. To reset the factory defaults just use

CODE CLINIC

CODE CLINIC CODE CLINIC

readable than:

```
   move.l      4(a0),a0      ; ☛
Fetch pointer to next node.
```

Although both are functionally the same, I know which I'd rather use. And besides, if you added a new value in between **f_previous** and **f_next** called **f_number** (long word), then with the former method you'd simply re-assemble. With the latter someone would have to go through the entire program and add 4 to all references to 8 **(f_next)** and 9 **(f_flag).** And of course, all references to 9 as the size of a node would be incorrect.

This does not go far to explain why Nick can't assemble the program though. This could be a problem with *DevPac* 2.14, which I'm afraid I can't test – I tested the **RS** directives under 3.04 and they worked just fine. But this could be the time to upgrade your assembler and your include files, Nick!

On to the bugs. There are two things which are incorrect in the program from *Amiga Shopper* 23. One of them is the reference to **Timer_Port,** which was:

```
Timer_Port:  dc.b   MP_SIZE
```

Oops. This defines one byte which contains what **MP_SIZE** is. **Timer_Port** should actually be a whole collection of bytes, in fact **MP_SIZE** bytes, instead of 1. What would have happened is that the Amiga would have written information into this area. It would most certainly have written a whole lot more than one byte, which would have had the result of corrupting up to **MP_SIZE-1** worth of bytes after the program itself. To be perfectly honest, the chance of this actually causing any damage is pretty remote, since **MP_SIZE** is a very small value indeed (34 bytes). If your machine has 2Mb of RAM, and since the **Timer_Port** definition was the last in the program, you're pretty safe.

This is no excuse though. Corrupting memory can be a very very bad thing. In this instance we were very lucky. If we'd had further data storage after **Timer_Port,** it would almost certainly have become corrupted; which would have caused the program to behave in an unpredictable manner. In the meanwhile, if something else allocated the memory we were trashing, then it in turn would have behaved in an unpredictable manner, which is inexcusable.

This sort of bug is an extremely common one – accessing memory you don't own by accident and causing damage. The real problem with this sort of error is that unless you hit something which causes the program to crash immediately, it's unlikely that you'll know what caused the problem, where, or indeed if any damage occurs at all.

Good program structure can help to avoid this sort of problem, as can running debug tools such as *Enforcer. Enforcer* watches a whole bunch of dangerous memory areas and tells you quite definitely if you access things that you should not access. This will help to trap a lot of the most common memory trash bugs, and help you to work out where the problem actually happened. Unfortunately *Enforcer* requires an MMU, which the A1200 and A4000/030 do not have as standard.

The other thing is that I left in a line of my personal debugging code:

```
 move.w      #$fff,$dff180
```

This was a bit naughty, but totally harmless. What this does is to write bright white to the background colour register, which on ECS machines has the effect of flashing the background white briefly. On AGA machines this won't work properly, because it could mean one of 64 different things. Also, it's naughty because it's a direct hardware register access. A better solution would have been to open the **intuition.library** and call **DisplayBeep(NULL),** which would have been an OS-legal way of flashing the screen.

There are two listings this month, one to show you how to flash the screen legally and reliably on all chipsets, and the other the corrected version of the timer.device program from *Amiga Shopper* 23 with the offending flash line removed and the **MP_SIZE** bug fixed.

```
Listing 2 - fixed timer program:
;
; Code Clinic, timer.device example.
; By Toby Simpson.
;
; This code is not perfect, it's been optimised ☛
so that it is not too long.
;
; It waits for one second and quits.
;
   incdir      "include:"
   include     "exec/exec.i"
   include     "exec/funcdef.i"        ; ! You may ☛
not need this line !
   include     "exec/exec_lib.i"
   include     "devices/timer.i"
   include     "exec/io.i"
   include     "exec/ports.i"

_EXECBASE:     equ     $04

SYS:  macro
   move.l      _EXECBASE,a6
   jsr         _LVO\1(a6)              ; Call
exec.library
   endm

   section     timer_demo,code

START:         suba.l a1,a1 ; Quick way of ☛
clearing Addr reg.
   SYS         FindTask                ; Get our task
ID.
   lea         Timer_Port,a0
   move.l      d0,MP_SIGTASK(a0)       ; Set task ☛
to signal.
;
   lea         Timer_Name,a0
   moveq       #UNIT_VBLANK,d0
   lea         Timer_IO,a1
   moveq       #$00,d1
   SYS         OpenDevice              ; Try to open
timer ☛ device.
   tst.l       d0
   beq.s       Timer_Opened            ; Opened OK.
   moveq       #$00,d0
   rts                                 ; Return.
;
; — Set up our reply port ....
Timer_Opened:  lea     Timer_IO,a1
   lea         Timer_Port,a0
   move.l      a0,MN_REPLYPORT(a1)     ; This is ☛
our reply port.
;
; — Now post our request and wait ....
   lea         Timer_IO,a1
   move.w      #TR_ADDREQUEST,IO_COMMAND(a1)
   move.l      #$01,IOTV_TIME+TV_SECS(a1)      ; ☛
Set up seconds
   move.l      #$00,IOTV_TIME+TV_MICRO(a1)     ; ☛
And microseconds
   SYS         DoIO
;
; — Now quit ....
Timer_Quit:    lea     Timer_IO,a1
   SYS         CloseDevice             ; Close timer
device.
   moveq       #$00,d0
   rts
;
; — Our data ....
   section     timer_data,data
;
Timer_Name:    dc.b    "timer.device",0
   cnop        0,4
Timer_IO:              ds.b  IOTV_SIZE
Timer_Port:    ds.b    MP_SIZE
```

the ATZ command, after first checking the manual to ensure that all dip switches are set correctly (a dip switch setting can decide if ATZ returns the modem to default NRAM or factory defaults).

To display the NRAM settings of your modem use the command **ATI5.** This should give a full listing of the settings on screen. Once you have made sure the settings are what you want them to be you can save them to NRAM by using the **AT&W** command. The **AT&V** command you mentioned won't display these settings, but is used to enable or disable verbal and numeric result codes. ***DW***

IN THE GREEN



I have been given a Memorex 12 green-screen monitor (minus connector). Is it possible to use it with an Amiga 500? If so, could you tell me what each of the 12 wires coming out of it does?
K Byng
Warley
W Midlands

I'm sorry to tell you that I've drawn a blank on this. Personally I have no idea which wires are which and because of the very limited amount of information you supplied (even a serial number would probably have helped) Memorex themselves cannot pin down what is what.

The Technical Support person I spoke told me that Memorex monitors are often non-standard and that he had personally tried to do a similar link-up with his PC and been defeated because of the need for expert modifications to the monitor.

In all honesty, your best bet is to ditch the monitor and buy a proper RGB model. At the very least, get hold of an A520 modulator and connect your A500 to a TV set – at least you'll be able to use all the colours the machine is capable of then, even if the quality isn't top-notch! ***GW***

GENLOCKED OUT



I have an Amiga 1500 which works fine until I connect my Rendale 8802 genlock. What happens is that when I turn on the machine the Workbench logo does not appear and df0: does not click. When I disconnect the genlock again everything works fine.

The genlock works perfectly on a friend's A500. Could my second disk drive be drawing too much extra power? My video port does not seem to be faulty because it provides a perfect signal to my monitor.

I'm told that Rendale had a shortage of 23-pin connectors, which is why my genlock came with a cut-down 25-pin connector. Could this be the problem?
Mattie Whittle
Ballyshoneen
Co. Waterford

The problem here is almost certainly that the 12V user supply from your Amiga's video port is faulty or, more likely, missing. This is probably due to a fuse failing inside your machine (Marcam tell me this is usually fuse 4 or 5, depending on the model). The bad news is that it isn't something which you can easily fix yourself, unless you are an electronics wizard, so you'll need to get your Amiga properly seen to.

If there is no 12V supply the result is that (a) the genlock gets no power and (b) the Amiga gets no external clock signal – hence the dodo-like symptoms you reported. Since we know that the genlock works correctly on another Amiga, then I suggest its time to call your friendly local repair man.

As for the cut-down connector – this was a common practice in the early years of the Amiga when the 23-pin D connector was quite uncommon (and fairly expensive). Many companies employed the tactic of chopping off one end of a 25-pin D connector so that it would fit into the Amiga's (then non-standard) video port. It should not be the cause of any problems. ***GW***

GOOD HOME WANTED



I already have an Amiga 500 Plus but I'm considering upgrading to the Amiga A4000/030. I want to use the new machine for visualising a renovation project on my house. I thought of using either *Imagine 2* or *Real 3D 1.4 Pro* with *Art Department Professional* or *ImageMaster* for display in AGA modes. The two 3D packages, although not the latest, are available at knock-down prices – an important factor in my choice of them.

Which of the programs do you think would be most suitable for my needs, bearing in mind that I wish to be able to extensively control the colour and texture of surface details? I understand that *Imagine* is very strong on this, but how does *Real 3D* compare?

I understand that *ImageMaster* contains a full paint program. How does this compare with *Deluxe Paint IV AGA?*

I was also hoping (in the future) to use *VistaPro 3* to produce backgrounds for a graphic adventure written in AMOS. Is this possible and when should we expect an AGA version of AMOS?

Finally, will my SCART-attached TV still be suitable for lo-res display with my Amiga 4000?
Chris Godfrey
Northampton

Wow! Big project.... Now let's get down to earth a bit. Before I answer your questions, have you considered just how long it will take you to learn how to model your house in 3D and then produce all the views, surfaces and angles that you might need for your renovation? I'm serious! Learning 3D software is often a very major undertaking – for instance, I'm still learning *Imagine 2* after over two years of regular use (and plenty of previous experience). The same goes for *Real 3D 1.4* (which has now been re-released as *Real 3D Classic,* by the way). I'd plan on spending a couple of months just learning the 3D software – which is fine if you have the time, of course.

As to the choice of which to use, it really comes down to personal taste. Both programs have their strengths and weaknesses and both can produce excellent images – with surface textures, colour changes and so on, as you require. My preference would be *Imagine 2,* but as you will have seen from recent *Amiga Shopper* covers, *Real 3D* also produces great results (in the right hands). I find *Imagine* more flexible for modelling – and this will be a major factor in the construction of your virtual house – and it also boasts a wider range of output formats, though neither *Real 3D Classic* nor *Imagine 2* supports any of the AGA modes.

As far as your question about paint programs goes, *ImageMaster* does have a paint program, but it really isn't very user-friendly – though it sort of works. It's more of a bonus for cleaning up small areas of an image, rather than producing entire new ones. I'd tend to stick with *DeluxePaint AGA,* or wait until Digital Creation's *Brilliance* is finally available (it's been paperware for months) – it looks as though it will at last provide some real competition for *DPaint.* If you want a "real" paint program you'll have to buy one – there are no really good ones included as part of another software package.

If you stick with ASDG's *ADPro* you won't go far wrong, though GVP's *ImageFX* is also pretty good and has at least as many useful features as *ADPro* – including "paint" functions, AGA support, format conversions, special effects etc etc.

I would recommended that you also buy some extra RAM when you buy your 4000/030, because the 4Mb supplied (which is probably going to be reduced to none at all very soon) just isn't enough for applications like 3D, 24-bit, image processing and AGA work. Aim for a machine with at least 8Mb on board – or even more. And if you want to really speed up those maths-intensive jobs such as ray-tracing, you should also consider adding an FPU (Floating Point Unit), which will probably set you back around another £140 (including the necessary crystal).

Turning to your *VistaPro 3* query: I really doubt whether AMOS (or the Amiga, for that matter) will be able to handle the amounts of data that you possibly envisage throwing at it for your graphic adventure. Of course I'm assuming that you want to use *VistaPro* animations, but even stills

continued on page 53

JARGON BUSTING

Hard drive: a data storage device like a floppy drive, but much faster and with much greater capacity. Also, the disk cannot be removed, so once the hard drive has been filled, it's either time to delete excess files or get another one.

Modem: MODulator/DEModulator. A device which converts computer signals into a suitable format for transmission along a phone line and converts incoming signals back into a form the computer can recognise. External modems connect to the Amiga's serial port, although it is possible to buy Amiga-specific cards to plug into the A1500 and A2000, thus keeping the serial port free for something else.

Modulator: a device which combines the output signal from a video source with a high-frequency "carrier signal" for further transmission. The video source is said to be modulated with the carrier signal. A modulator is required for input into TVs, which expect to receive their signals at higher frequencies than monitors.

RGB: Red Green Blue – a standard for video signals that provides better quality than composite or Radio Frequency signals.

Scanner: A device which converts an image on paper into a digital form suitable for the computer. The image can then be used in a paint package such as *Deluxe Paint.*

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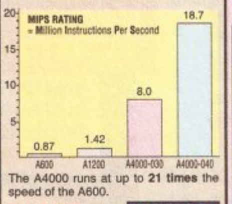
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	ALONE	WITH MATCHING DRIVE KEYBOARD, MOUSE + WB 1.3
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NEW MID RANGE AGA AMIGA

AGA Chip Set + 68030 processor, 68882 25/50 MHz co-processor option, 256,000 colours from 16.6M, scan doubling for flicker free display, Mouse, Amiga 3.5"/1.76 MB 3.5" drive, Hard Drive as below, Amiga DOS 3.0 system and utilities, Gold Service on-site warranty

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INTERNAL CLOCK		POA

*ADD £14.99 for Hobbyte fitting
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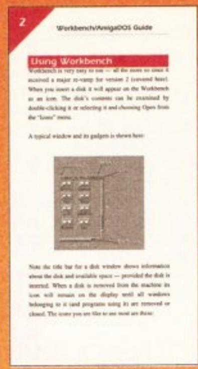
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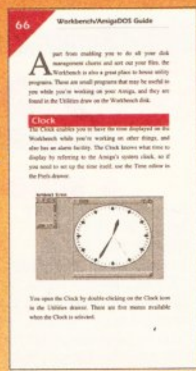
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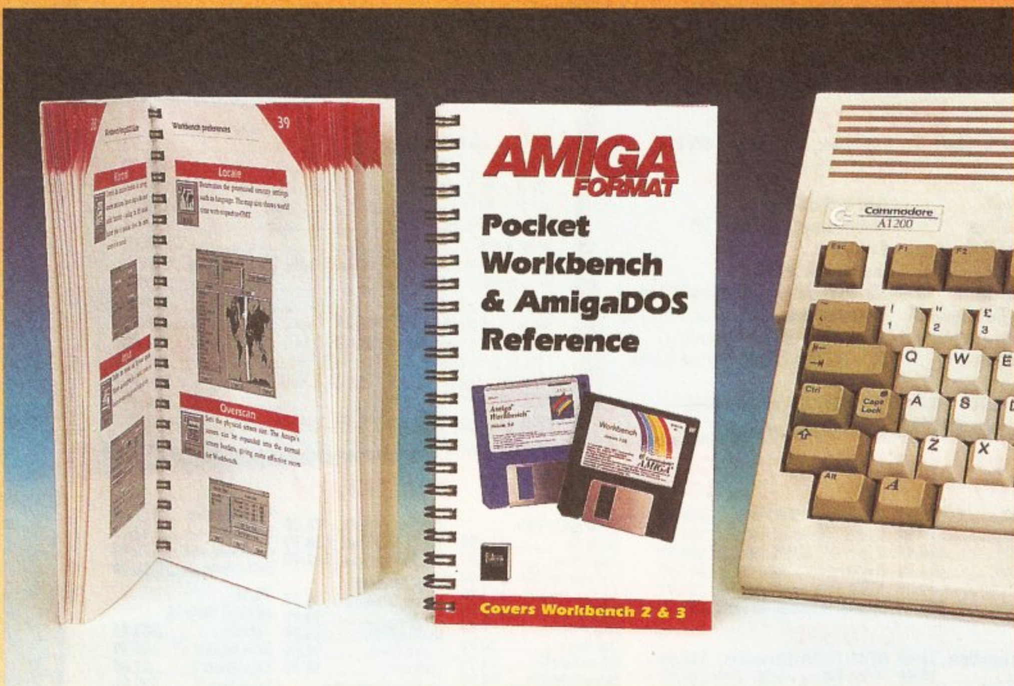
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continued from page 48

can take up a heck of a lot of space. For instance, a single 320 x 256 HAM8 image done with *Vista* can easily require more than 60,000 bytes to save, and that's without trees or ultra-fine detail. So you might have to consider supplying your game on CD in order to fit all your backgrounds in!

As for an AGA version of AMOS, the latest info I was able to glean is that although AMOS now works okay on AGA machines a version which actually uses the full AGA graphics modes is still under development and no release date has been set.

Lastly – yes, your current TV monitor should work fine with your new Amiga, though you won't be able to use most of the new screen modes with it. ***GW***

INTO NEW TERRITORIES

BUYING

I am a lonely Amiga user in Hong Kong. I wish to use an Amiga to make real-time animation in (nearly) true colour. I have less than £1,000 to spend, so I have a choice of upgrading my old A500 (1Mb) or buying a new Amiga. Here are my questions:

1. How much "power" is required to animate HAM8 graphics in full-video size in real time? Is an Amiga 4000/040 capable of doing this? Or possibly an accelerated Amiga

CUSTOMISING QUERIES

GENERAL

My system is three years old and comprises a B2000 and 2090A auto-booting controller with a 42Mb drive. I have also installed a ROM switcher taking me between Kickstart 1.3 and 2.0 with accompanying modifications to the relevant startup-sequence files to boot the correct Workbench. Although I have overcome most of the problems associated with such a set-up, I would appreciate your help in the following areas:

❶ The installation manual for 2.04 boasts a doubling of data transfer speed for hard disks when using the improved Fast Filing System (FFS). Using *SYSINFO,* I can get no reported increase in speed even after formatting the disk with FFS. Can I upgrade the board by fitting replacement EPROMs to bring it up to the 2091 specification and would such an update enable me to use the supplied *HDToolbox* software?

❷ During the boot-up process, I receive a message from IPREFS telling me to close windows in order to set preferences. Since this only occurs when booting from hard disk I can only assume it has something to do with the fact my system does not boot from a Workbench partition. Is there some solution or should I put up with it until I remove Kickstart 1.3 altogether?

❸ Is it possible to alter the colour scheme in *Superbase Personal 2* without changing the Workbench colours? Under WB 2.04 the colours are reversed and can only be changed by altering the existing palette.

❹ Is it possible to add applications to the Workbench TOOLS menu? I have noticed that *Excellence* does this once it has been started. I am aware of the LEAVE OUT option but wish to avoid cluttering the Workbench screen by adding my most-used applications to menu items.

❺ Could you explain the AppMenuItem and AppIcon facilities?

B E Mathews
Walsall

Let's take these one at a time.

❶ Fast Filing System can be seen as something of a two-edged sword, but there is little doubt that it is much faster than OFS at the expense of data redundancy (see the box at the bottom of the page headed "Is IFF faster?"). Sadly, it is not possible to upgrade the 2090A without chucking the whole thing away and starting again – and to be frank, that is the route I suggest you take.

❷ The IPREFS message is being generated because the initial CLI window has been opened by something. You don't say much about your startup-sequence other than that it assigns the relevant directories automatically depending on which ROM is currently active. Under Kickstart 2, the IPREFS daemon is responsible for all the user preference settings, and is complaining because something has pre-empted it. To explain: if any AmigaDOS command attempts to display something on the console *before* IPREFS starts, the machine opens a default window and a default console. It is up to you to make sure nothing gets displayed before IPREFS gets a look-in. You can achieve this by directing all commands to **NIL:** and don't attempt to **ECHO** anything before the window is properly opened by the system, like this:

```
VERSION >NIL:
ISTOO >NIL:
IF NOT WARN
DH0:C/ASSIGN >NIL: C: DH1:C
ASSIGN >NIL: LIBS: DH1:Libs
etc.
IPREFS
ECHO "You may start displaying
☛ things now..."
```

❸ *Superbase Personal 2* was written long before anyone ever thought of Workbench 2 and that explains the clash. Commodore did think of this though, so if you don't want to run *Superbase* on a custom screen I suggest you define an alternative palette and save it (with an icon) from the Palette preferences tool. This will enable you to have a separate palette ready for when you want to use *Superbase.*

❹ Strictly speaking the **TOOLS** menu is an **AppMenu** and this is reserved for use by running applications. What you need is an applications dock such as the one devised by Nico Francios of *Powerpacker* fame. You should find this is available from most large PD libraries and user groups.

❺ "Konfusion rains KO." These features appeared, almost unannounced, in Kickstart 2, together with a few others, and every one seems to have been borrowed from somewhere else. Let's break down the term: "App" refers to a running application – one that is available for you to use. The second part of the term determines what the feature does. An **AppIcon,** therefore, is an icon belonging to a running application, and an **AppMenuItem** is a menu item (selection) belonging to a running application. Such items are therefore transient, and only appear as long as the application is active.

The whole idea is based on the theory that the Workbench screen is the central dock for all applications – a common ground if you will. Here is how the various things work:

- **AppMenu:** The tools menu only usually contains a single entry: **ResetWB.** However, any Workbench 2 aware application can add its name to this list – an **AppMenuItem.** This gives you a simple way to activate it instantly rather than locating its screen or window among a pile of others.
- **AppIcon:** If you want to open a project from any application, the normal process would be to activate the application and select **Open** from its **Project** menu. Workbench 2 aware applications can open an **AppIcon** on the Workbench screen which acts as a project dock. In other words, dropping a project icon on the **AppIcon** is the same as selecting **Open** and selecting the project by name. A typical example of this is found in *Wordworth 2* – the Wordworth deposit.
- **AppWindow:** This feature is available to Workbench 2 aware programs and works in a similar manner to the **AppIcon** facility. A project can be loaded in an application by simply "dropping" its icon in the application's window. A typical example of this is the **IconEdit** program supplied with Workbench 2. ***MS***

IS FFS FASTER?

Commodore were long criticised about the speed of disk access on the Amiga, so they came up with an improved system, Fast Filing System or FFS – the original system is commonly called OFS (Old Filing System).

There are several improvements in the new system, not least a change in organisation of the data blocks. Data blocks are the disk sectors containing actual information: program code, user data and so on. Reserved blocks are different: these are only used by the system – directory blocks and such things. Under OFS every data block contains 24 bytes of redundant link and block type information. Plus, there is no predicate to ensure that data blocks are written in any hardware-convenient sequence. Since OFS always attempts to fill any convenient gaps, data gets scattered all over the disk; aggravating the problem of file fragmentation.

FFS fixes these problems by storing 512 bytes of data in data blocks and attempting to write those blocks in contiguous chains whenever possible. This has the effect of slowing down the creation process slightly, but improves the read speed considerably.

Take a purely theoretical example. If FFS were asked to write 10K of data, it would always try to lay that information down as a chunk of data 10K long (20 blocks). OFS on the other hand would scatter the data all over the disk and use 21 blocks, which take longer to retrieve.

The exact increase in speed is not always easy to quantify. Indeed, a lot depends on the level of file fragmentation – which is why disk optimisers seem to speed even FFS disks up as if by magic. Take it from me, though, FFS is faster and the latest DCFS (Workbench 3) is even faster still in the right circumstances.

1200?
2. If I chose DCTV to make real-time animation should I go for a PAL or NTSC one, given that I have an NTSC Amiga and that Hong Kong has a 220V/50Hz voltage supply?
3. Are there any PAL single-frame controllers and frame-accurate video decks?
H C Tsui
Hong Kong

I'm afraid it will take more than £1,000 to get full-screen HAM8 graphics animating in real time. For a start, none of the current Amigas is capable of this feat for anything more than very short bursts – depending on how much RAM they have, because the Amiga cannot move graphics data from its hard drive fast enough to animate at 25 frames per second. Secondly, the sheer volume of graphics required for even a minute's worth of playback (that's 1,500 frames) could quite easily fill a large-capacity hard disk, especially if you want "true-colour", or 24-bit quality. Such problems were slowly being addressed by companies like DMI with their Digital Editmaster products, but these will require a fast Amiga, large SCSI II drive and plenty of RAM, as well as their special hardware. And now that DMI have gone out of business, it's anyone's guess what will become of these products. So the answer to your first question is essentially no – there is no current off-the-shelf Amiga which is capable of real-time HAM8 animation in full overscan, especially for less than £1,000.

If I understand you correctly your Amiga is NTSC (though Hong Kong uses PAL-standard television). Since your current Amiga setup is extremely basic I'd certainly consider buying a new one – first because your A500 will never be capable of displaying AGA graphics and second because it ought to be a PAL one. Remember that you'll also need a hard drive, because it is usually impractical to try to get serious graphics onto floppy disks. Whichever way you go, you'll have very little change from £1,000 once you've bought an A1200 and added a hard drive and extra memory, so try to get a PAL DCTV thrown in cheap.

While DCTV cannot handle AGA graphics it can produce pretty good results if you don't mind slightly smeary-looking composite video output. In fact, your best bet is a single-frame controller and frame-accurate video deck, but you'll be looking at several thousand pounds (minimum) for such extras.

There are several single frame controllers available for the Amiga, the most popular probably being the Nucleus Personal SFC (which requires a VCR with time-code to operate) and Optonica's Simpatica, which can use just control track, if necessary. There is quite a range of frame-accurate decks available, but all well outside your current budget – even the S-VHS and Video8 models. It may be better to consider finding a facility which can rent you time on such a setup, allowing you to make your graphics at home and then transfer them en masse to videotape as required.

I'm sorry that this doesn't appear to give you much hope, but I'm afraid that real-time full-colour playback is currently the domain of rather expensive, dedicated computers and hardware. Prices will fall with time, but for most of us ownership of such toys is still well into the future. ***GW***

WHICH HARD DRIVE?



I have an A500, a Philips colour monitor, a Star LC24-200 colour printer, a Power colour scanner and a lot of DTP and graphics software. I recently purchased an upgrade to *Professional Page 4.0*, but this will only work if installed on a hard disk. My scanner is connected through the A500 expansion port. I would like to know:
1. Which hard drive would be best in my case?
2. Can I connect my scanner to an A1200?
J Kotei
Erith
Kent

The GVP HD8+ is still the best-value quality external hard drive for the A500 and A500 Plus, and with the A1200 now becoming so popular you can get some good bargains on A500 hard drives – although if you are thinking about buying an A1200 soon, then beware, this drive will not work on your A1200. The only A500 drive that can be transferred directly to work on an A1200 is the ICD Novia 2.5-inch internal hard drive (distributed in the UK by Power Computing ☎ 0234 843388).

Your scanner will not connect directly to an A1200; you will need a new interface and software (again available from Power Computing). ***JR***

PARALLEL PROBLEM



I'm designing a universal I/O card that will connect to the Amiga via the machine's parallel port. Unfortunately, I don't know much about the Amiga in order to take full control of the machine's parallel port. I would therefore be most grateful if you could suggest a way to control the parallel port lines using a programming language such as AMOS Professional. The most important lines that I need to be able to control are STROBE, SELECT, RESET, ACK and POUT.

I have tried contacting Europress, but they simply suggested that I get my hands on a copy of the Amiga ROM Kernel Manual (Libraries and devices). I did borrow a copy from a friend, but it has proved to be of no help whatsoever. Please help!
T Broekmans
Simpelveld
Netherlands

Europress were right in suggesting that you get your hands on a copy of the ROM Kernel manual if you want to code the parallel port legally through the operating system. Personally, though, I'd suggest you hit the hardware directly by poking values to the Amiga's hardware registers. You'll need to turn off multitasking when you do this though, just in case another program is trying to do the same thing.

May I suggest that instead of trying to root through the ROM Kernel manual, you lay your hands on a copy of the far more readable *Hardware Reference Manual* from Addison-Wesley (ask at a computer book shop). There's a full description of the parallel port and how to program it in Appendixes E and F. ***JH***

STEAM TURBO



Six weeks ago I added the GVP A530 Turbo to my system. When I'm powering up and booting from the hard drive it occasionally (about two or three times out of ten) makes a noise a bit like a steam train and it then either puts up the purple screen requesting a floppy or puts up the "read error" box.

When this first happened I checked all the software using *Virus Checker* v6.19 – no problems. I then did a bad block remap and reformatted the drive. The problem remained, so I contacted the company I bought it from (Power Computing) and they asked me to check the SCSI ID number. This was set at 6. They then told me to change the position of the Shorting blocks on the jumper pins on the front of the IBM hard drive to change the ID number to 0. Unfortunately they could not tell me where to put the pins!

By luck the first position I moved them to gave the desired effect of changing the SCSI ID to 0, but the problem still remains. The last three read errors were "Read Error block 33921", "Not a DOS disk in device DH0" and "Read Error block 32202". In all cases a soft reset has made the hard drive boot normally and everything appears to work perfectly alright.
B Adams
Heath Charnock
Chorley

I've heard of no similar problems with the GVP A530, so it appears that you may well have a faulty drive. I can see absolutely no reason why changing the SCSI ID from 6 (a perfectly valid ID for this drive in the GVP A530) would do anything to solve this problem. You were nearly right in changing the ID: the jumper blocks removed from the right hand side should have been taken off and not put back anywhere, although I would suggest you put the configuration back exactly as it was when it was delivered to you and send the whole thing back to Power Computing for replacement. ***JR*** AS

JARGON BUSTING

NTSC: National Television Standards Committee. This is the name for the TV colour coding system used in the USA and some other countries. It has 525 lines, running at 60 fields and 30 frames per second. It is often, and perhaps unfairly, japed at by PAL standard users as "Never Twice the Same Colour".

PAL: The other main TV colour coding system (with the exception of France's SECAM system). It is in use around the world and was developed in Britain. PAL is an acronym for Phase Alteration Line. In fact, there are several hybrid PAL systems in use in various countries, all of which are slightly different.

Ray-trace: A means of drawing a "three-dimensional" computer picture where objects are specified as geometrical shapes with definable surface textures. Theoretical light sources can be placed at will in the imaginary area. The Amiga then draws the scene by tracing the possible straight-line paths of light from these sources to the objects and using the laws of optics to calculate refelctions and shadows. The result can be impressively realistic.

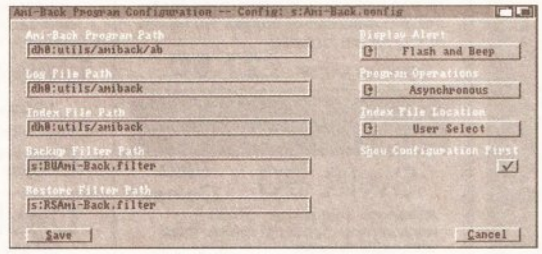
Time code: A numerical coding system recorded on to audio or video tape to uniquely identify hours, minutes, seconds and frames. This allows accurate location of the tape at any point.

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Ami-Back's back

Protecting against data loss has never been easier. Philip Gladwin looks at what could be an essential hard drive utility, Ami-Back.

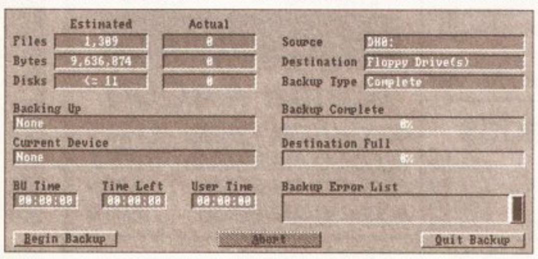


The program configuration screen. There are two more of these for the backup and restore processes.

Confession time: is all your precious data completely backed-up, right up to date? If not, *Ami-Back* v2.0 is here to take all the strain out of the back-up process.

Ami-Back's hard drive installation routine whizzes along and worked first time. The opening screen presents you with the three functions available to you – **Backup, Restore,** and **Scheduler** – and the system configuration is made available through the normal pull-down menus.

The programmers say that ease of use was a design priority, and you really have a lot of control. You decide whether to back up the whole hard drive, just a partition, or one, several or many directories. You can put your back-up onto floppies, tape streamers, the **RAM:** drive, or even into a single AmigaDOS file back on the hard drive if you so desire.



The back-up about to start. Ami-Back has estimated that it'll need ten disks – it actually used eight.

There are four different types of backups. Some are more useful than others, but it's always nice to be given the choice. The **Complete** back-up is the one you do first time – it copies every file and every directory from your hard drive onto your back-up device, preserving the structure as it does so. This is the most laborious bit, but it's not too bad: backing up my hard drive – around 10Mb onto eight floppies – took around 26 minutes. I'd guess that a bigger drive would scale up the time proportionately. (Still, that means it would take five hours to back up a 100Mb disk, which isn't so bad.)

Selective back-up is the mode that enables you to back up the subset of your hard drive that you specify; and the **911-Recovery** mode is the back-up mode that does its best to recover deleted or corrupted files from fast file system disks – again you can specify which. Finally, **Image** back-up is the mode you would use if you wanted an exact, bit by bit replica of your hard drive. This enables you to back up non-AmigaDOS partitions (IBM, AMAX, UNIX, whatever it may be) that can't be read by standard back-up methods.

All of these back-up modes have configurable options – you can choose whether or not to compress your data as it is backed up, to add a label to the particular back-up, to protect it with a password, to create a catalogue file of the file and directory structure of the backed-up data, or, most usefully, to back up only files that have been changed since the last back-up.

Now, imagine that the worst has happened – you switch your Amiga on and all you see is a wisp of smoke from the hard drive fan vent. How easy is it to use *Ami-Back* to retrieve your data from cold storage?

Don't worry. Just configure the Restore options, make sure you have all the floppy disks containing the back-ups at hand, and set it rolling. You can perform a complete restoration of everything that was backed up, or select a subset of this. You can choose not to restore anything at all but just to compare what's left on your hard drive with what you have backed up – useful where you are not sure what the extent of the damage actually was. Or you may perform an image restoration, re-creating bit by bit your original back-up. You have the choice of maintaining the original file date or using today's; you can forget about the original tree structure and sling everything into one big directory; you can alter the protection bits on the files as they are restored. Once again, you have a lot of control.

RAISING THE DEAD

So how well does it work? Mostly, great; exactly as it should. I had one guru, which isn't exceptional, and a couple of lock-ups, which may well have been my fault for trying to grab screen-shots with *PicSaver* while *Ami-Back* was running. There was one real bug: while *Ami-Back's* status window reported two read errors on two separate files as it was making the back-up, the error file it printed out at the end only mentioned one of them. This means you can't rely on that printed report, which is a pity.

My other real criticism concerns the user interface. *Ami-Back* is simple to use when you have worked out what all the options do, yet at first it all seems just a little confused, a little counter-intuitive. The manual is fine; it's all there, somewhere, but it's not spelled out for you – and the text more or less follows the user interface around, so you need to read it three times before you're completely sure you know what is going on. I'm nit-picking here, but I know the difference made by a really top-notch user interface and documentation, and though *Ami-Back* is an excellent and desirable utility, it is not quite there in this department. AS

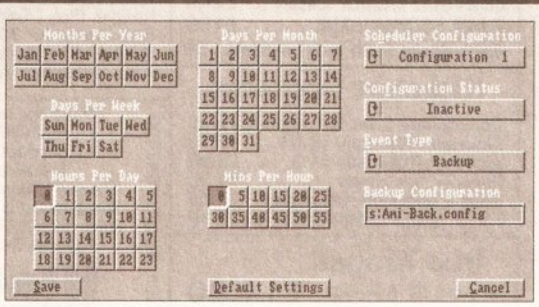
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Ami-Back £69.99
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From: Micro-PACE, Unit 10,
Perth Trading Estate,
Perth Avenue, Slough,
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☎ 0753 551888

RUNNING TO SCHEDULE

Also included in your *Ami-Back* package is something that you will find indispensable or completely useless, depending on your working methods. The *Scheduler* enables you to automate your back-up procedure completely. Using this utility you can tell *Ami-Back* to run every hour, every day of the year, or at 5.35am on June the fifth. This means that you need never worry about losing data as long as (a) you have your Amiga running at the time you have told it to make the back-up, and (b) you have either a tape-streamer or someone there in person to swap disks. The presence of the fully configurable and very flexible *Scheduler* is yet one more feature that makes *Ami-Back* feel like a professional user's utility.



The Ami-Back package includes the Scheduler, a utility which can automate the whole back-up process. Now you never even have to use your machine!

CHECKOUT AMI-BACK

Features ●●●●●
Plenty of them. Realistically, all you'll ever need for creating back-ups.

Documentation ●●●●○
Above average, but could do with a little more clarity in places.

Ease of Use ●●●●○
Once understood, never forgotten.

Value for Money ●●●●○
A good quality package with a price to match.

Overall rating ●●●●○
Nearly seamless, to be recommended.

Right a bit, down a bit...

Jeff Walker risks the few hairs left on his head to show you how to get pages on the screen to print in the same position on the paper.

Are your printouts always positioned wrongly? Do you set a half-inch top margin and end up with three-quarters? When you print multiple pages does the text creep further and further down each page? Do you get blank pages fed through between each printed page?

We get more letters about these problems than anything else, blaming wrong printer drivers, poorly written software, idiosyncratic printers, etc etc. In fact, all these problems are caused by nothing more mysterious than poorly set-up page sizes.

In other words, it's your fault. Okay, no-one's shown you the correct way to set up your pages, so you've had an excuse. Till now. These three pages will tell you all there is to know about setting up page sizes and margins correctly in word processors and desktop publishing software.

We'll be concentrating on four programs in particular, but the principles of dealing with page sizes and margins apply to all Amiga software. The confusion stems from the fact that every program does it differently, and uses different terms to mean the same thing – even wrong or ambiguous terms.

The main confusion is between the terms "paper size" and "page size". Although they are not the same thing, a lot of software and documentation use the terms interchangeably.

Your "paper size" is the physical dimensions of the piece of paper you are printing on to. So the paper size of A4 paper is 210mm wide by 297mm high.

Your "page size" is the dimensions of the area of paper that your printer is capable of printing on to. You will have discovered that your printer has what I call "hardware margins" – areas of the paper that it cannot print on to because of hardware restrictions. Feed any size of paper into an average printer and it will start printing a small distance down from the top of the paper and a small distance in from the left. Less obvious are the small "non-printable" areas on the right-hand side and bottom of the paper.

Take a look at Figure 1. This is a generalised view, and the hardware margins have been exaggerated for clarity. The shaded area in the centre is the "printable area" – your page size in other words; the white bits round the edges are the parts of the paper the printer cannot get at. Many printer manuals contain a diagram similar to this, and distances for a range of paper sizes will be given for the margins marked L, R, T and B, plus the dimensions of the printable area (X,Y). These dimensions will be different for different sizes of paper because of the way the paper is positioned ready for feeding, and because of the way the printer feeds paper in and out of its mechanism.

IT ALL ADDS UP

Dimensions are normally given in millimetres, often with the equivalent in inches. Sometimes, particularly with laser printers, the dimensions are given in "dots" of the printer's highest resolution. For example, one 300 dots-per-inch (dpi) laser printer I have at the moment has a top margin of 48 dots for A4 paper. To convert this figure into something meaningful to the software I am using, I have to divide the number of dots by the resolution, which gives me the distance in inches. In this case, 48 dots divided by 300 dpi equals a top margin of 0.16 inches

So, before you can set up page sizes and margins correctly for any software, you first have to find out the dimensions of your printer's printable area and its hardware margins. If these details are not in your printer manual you have two options: phone the manufacturer of the printer and ask, or find out for yourself by trial and error.

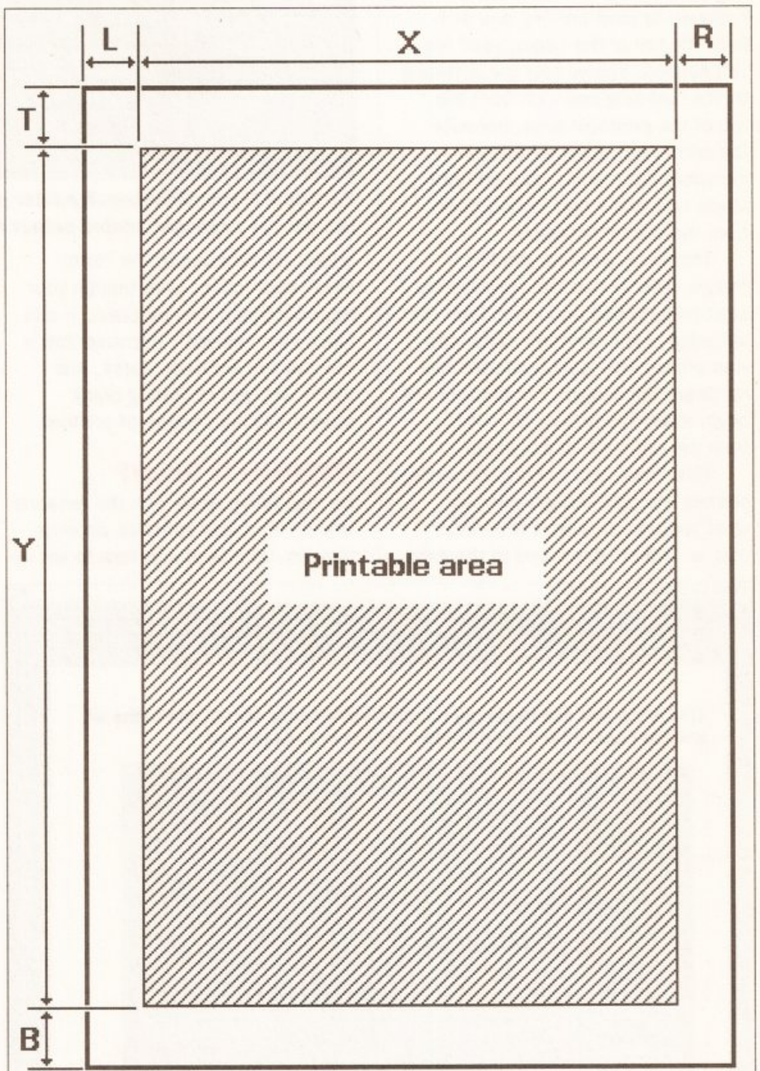


FIGURE 1 Look in your printer manual for a diagram like this – it is the key to setting up page sizes correctly. And we'll tell you what it all means as well!

By far the easiest trial and error method is to set up your software's page size to be the same as your paper size, with zero margins – select A4 page size if you are using A4 paper for example – and then completely fill that area with something to print. In DTP software you could plonk an A4-sized filled box on the page; in word processor software you could import a graphic and size it so that it fills the entire A4 area. Then print that page, letting the paper feed into the printer automatically – after the paper has fed into the printer, don't fiddle with the manual paper-positioning knob. After printing that page, the printer will feed it out and probably request another sheet. Don't worry about that; we're only interested in the page that has just been fed out.

Look at that page. The white bits around the edges are your hardware margins. The part of the paper that has been printed on to is your printable area, or page size. Measure these distances and write them down for future reference.

Now, this area I have called "hardware margins" is known by different names. *Final Copy II*, for example, calls it the Print Area, which is extremely confusing because the one thing you can't do in this area is print in it. *Wordworth 2*

calls it the Print Border; *Professional Page* calls it the X and Y Offset; *PageStream* doesn't call it anything.

Now, consider the way a typical piece of software would print a typical page to a typical printer.

You've selected an A4 page size. You want an inch top margin, half-inch margins left and right, an inch bottom margin, and you've set up these margins accordingly in the software. Come print time, the paper feeds into the printer and the page begins to print. You've told the software to start printing one inch from the top of the paper, yes? *No, you haven't.* You've told the software to start printing one inch from the top of the *printable* area. Because the printer has (say) a half-inch hardware top margin, your printout starts one and a half inches down from the top of the paper.

The same goes for the left margin. You've told the software to start printing half an inch in from the left edge of the printable area, and if your printer has (say) a quarter-inch hardware left margin, the printout will begin three-quarters of an inch in from the left edge of the paper.

This "bad" left margin, of course, pushes the right margin over, so what you end up with is a printout that is "offset" down and to the right of where you actually wanted it.

But what about the bottom margin? The odds are that the "page end" marker you've set (actually a "form feed" instruction added by the software) has been pushed down so far that it can no longer be printed on that piece of paper. The printer gets to the part of the page that is its hardware bottom margin, feeds the paper out (because that's what its internal software tells it to do), feeds in a new sheet of paper, then finds that all it has to print is a blank margin and just feeds that piece of paper out because of the "form feed" instruction. Even though your bottom margin may be blank, it still has to be "printed", because that's the way the software works. And that's why you're getting blank sheets between pages of printout.

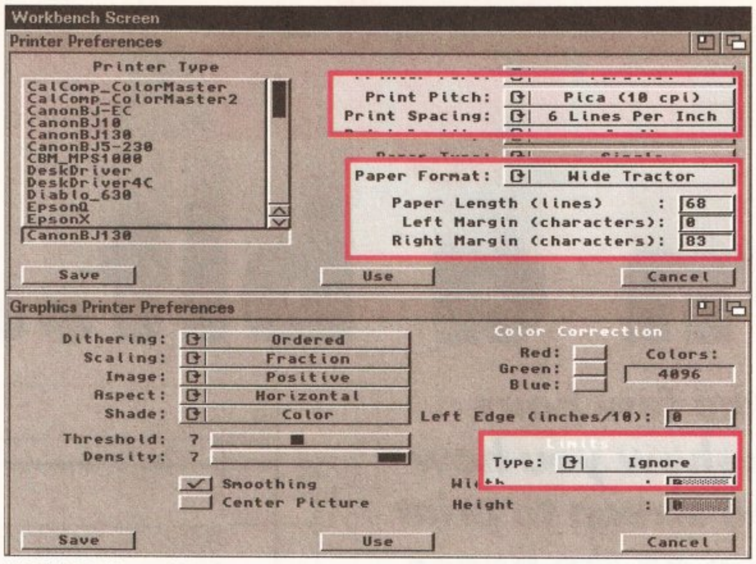


***FIGURE 2** If your Workbench printer preferences are not set correctly you may not get the expected printed output from the software you are using.*

GETTING IT RIGHT

So now we've dealt with the reasons why printers and software do what they do, let's deal with how to set up your page sizes. First stop is Workbench **Printer** and **PrinterGfx** preferences.

In **Printer** preferences set the Paper Format to **Wide Tractor.** Why not **DIN A4?** Because, just like printers, printer drivers have hard-coded instructions about page widths, and you'll find that printer drivers will restrict the print width to just under eight inches when **DIN A4** is selected, no matter what page width measurement you have entered in any other program. At the end of the day, the printer driver has the final word on this. Selecting **Wide Tractor** instructs your printer driver to increase your printable width to 13.6 inches. Obviously you can't print this wide on an A4 printer, but it enables you to print as far across the paper as possible.

Figure 2 shows recommended settings for **Printer** and **PrinterGfx** for A4 printers. The gadgets ringed in red are the important ones. One point that this figure doesn't show is that if you are in the practice of printing many-paged documents to a printer that has an automatic cut-sheet feeder, then you *must* set your **Paper Type** (above **Paper Format)** to **Continuous,** not **Single Sheet.** *This is very, very important.*

Okay. Workbench printer prefs out of the way, let's look at specific packages. *Final Copy II* first, because it has made the best attempt to make it as easy as it should be.

In Figure 3 you can see that I have selected the **Custom Page Size.** I've done this merely to illustrate the fact that *Final Copy II's* dimensions for A4 in inches are not necessarily correct. Check your printer manual and see what it says A4 dimensions (in inches) are, and adjust the *Final Copy* dimensions accordingly. Either that or use millimetres, because everyone agrees that A4 is 210mm x 297mm.

What *Final Copy* means by **Print**

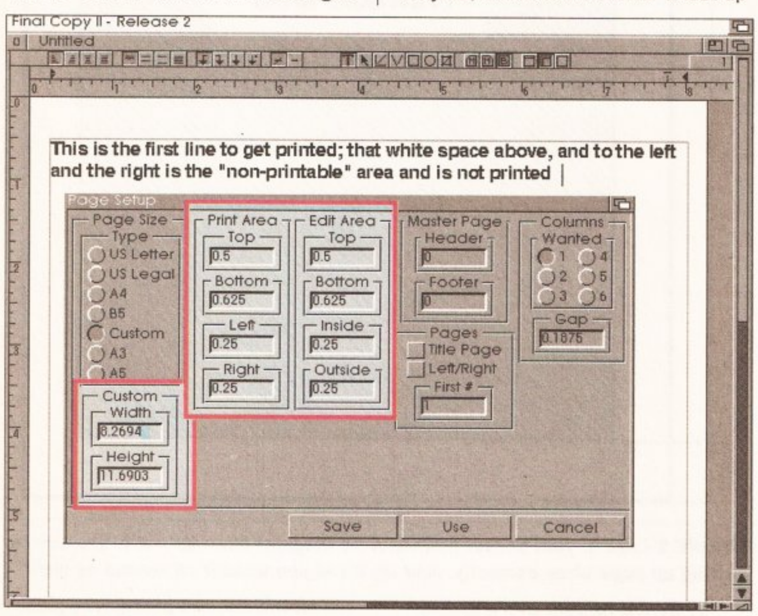


***FIGURE 3** Final Copy II enables you to describe your printer's hardware margins in its confusingly-named Print Area gadgets.*

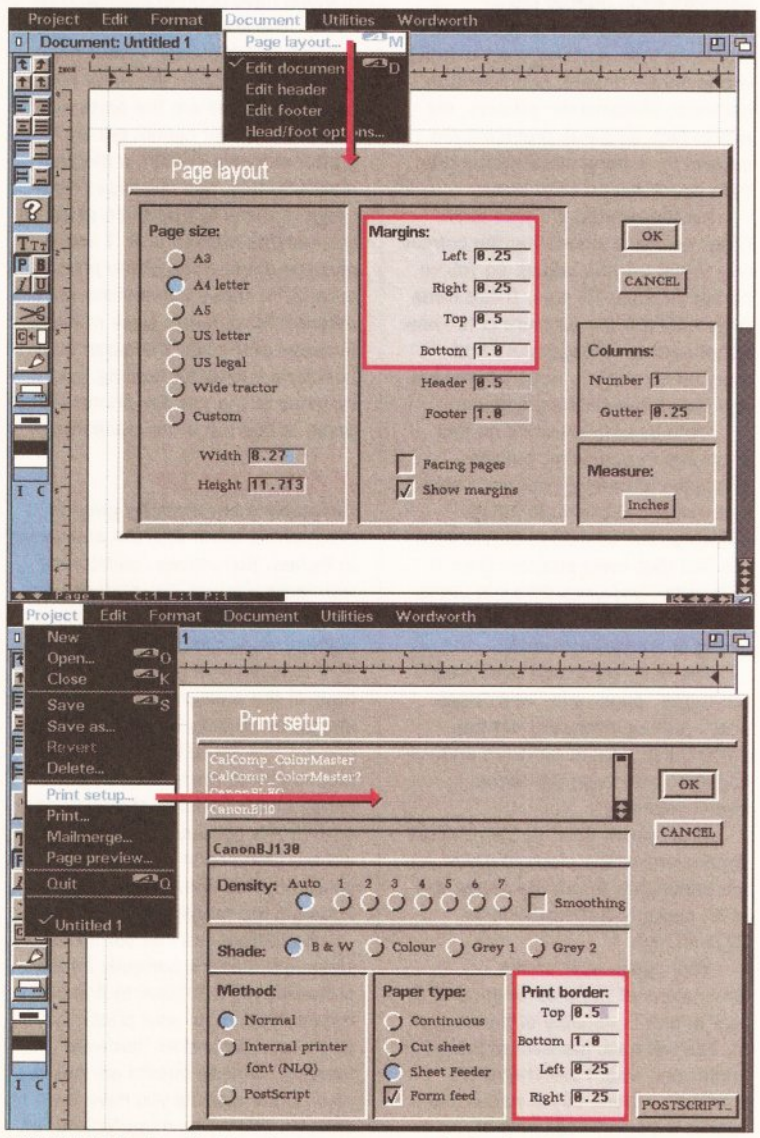


***FIGURE 4** Wordworth 2 confuses many users by having the printer's hardware margins in one requester and the on-screen margins in another.*

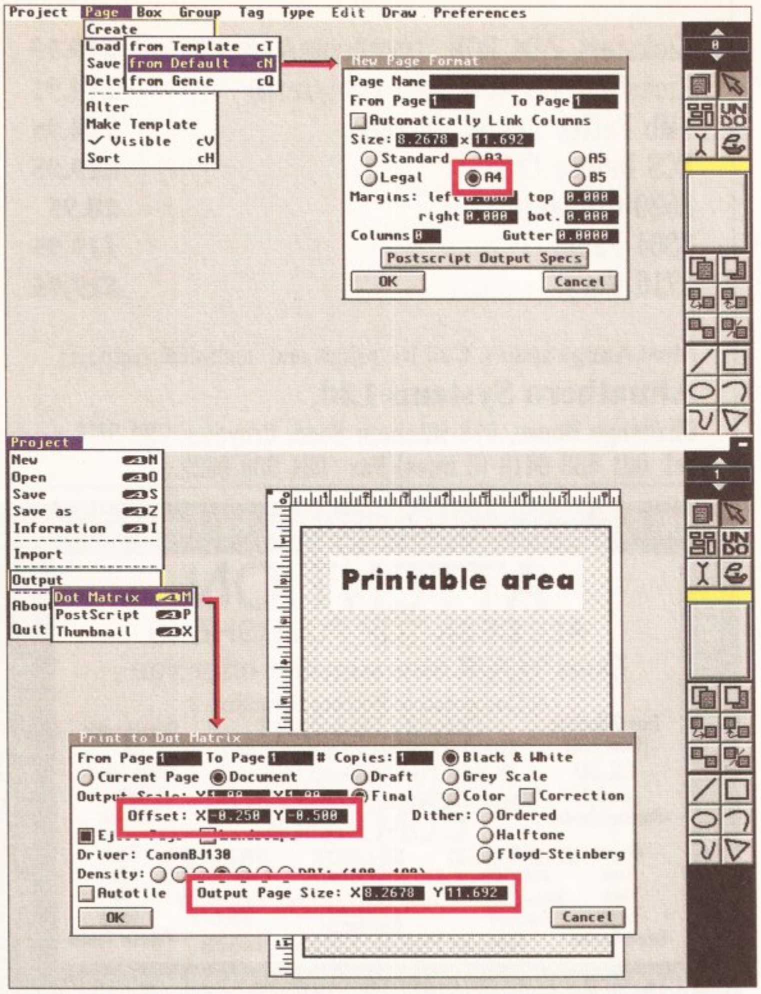


FIGURE 5 Correct output from Professional Page is dependent upon correct information being entered into the Output Page Size and Offset gadgets in its Output to Dot Matrix requester. The bits to look for are highlighted here.

Area is the non-printable (unshaded) areas shown in Figure 1, what I call the hardware margins. These dimensions need to be exact if they are to mean anything – **Top, Bottom, Left** and **Right** in *Final Copy's* **Print Area** gadgets are the T, B, L and R distances in Figure 1 for your particular printer.

The **Edit Area** is the part of the page you want to print on to. The measurements in these gadgets must not be smaller than the equivalent gadgets in the **Print Area** section. If they are set to the same distances (as they are in the figure) then you will be printing on the maximum printable area for that size of paper with your printer. To get larger margins, simply enter the size of those margins into the **Edit Area** gadgets, not the **Print Area** gadgets.

Once you have set the **Print Area** dimensions the only reasons for changing them are if you've entered them incorrectly, if you are printing on to a different size of paper, or if you have changed printers.

Wordworth 2 (Figure 4) uses exactly the same system, except it has split the two sections across two requesters. You enter your printer's hardware margins in the **Print Border** section of the **Print Setup** requester. Your actual page margins (what *Final Copy* calls the **Edit Area)** are set in the **Margins** section of the **Page Layout** requester. Again, the top, bottom, left and right **Margins** settings should be the same as the **Print Border** settings or greater.

Before leaving *Wordworth,* note that I've selected the A4 page size and that the inches dimensions in the **Width** and **Height** gadgets are different from what *Final Copy* says are the A4 dimensions in inches. These tiny discrepancies are almost certainly due to rounding errors when the software is converting millimetres into inches. In practice I've not found these discrepancies to be a problem.

Also note, once again, that if you are printing many pages to a printer that has an automatic cut-sheet feeder, it's normally best to select the **Continuous** paper type, even when there's a **Cut Sheet** option.

Nice and simple so far. Things become a bit more complicated with *Professional Page* (Figure 5). Assuming you are printing on to A4 paper, in the **New Page Format** requester you can select A4. But make a note of the dimensions that appear in the **Size** gadgets. When you come to print the page, these dimensions need to be entered into the **Output Page Size** gadgets in the **Print to Dot Matrix** requester.

But what about the hardware margins? These are described in the **Offset** gadgets as negative dimensions – instead of describing a positive distance from the edge of the paper to the start of the printable area, you are describing a negative distance from the edge of the printable area to the edge of the paper. So if your hardware top margin is half an inch you would enter –0.5 inches (or –1.27cm). And if your hardware left margin is a quarter of an inch you would enter –0.25 inches (–0.635cm).

NEGATIVE THINKING

What these example negative numbers effectively do is tell *Professional Page* to totally ignore the top half-inch and the left-most quarter-inch of the page on the screen – anything in those areas will not be printed. But you need to "manage" the right and bottom hardware margins yourself. If your maximum printable width is (for example) 7in, then add that figure to your hardware left margin and the resulting figure is the furthest across the page you should position any text or graphics. Do the same calculation for the maximum printable length, and don't attempt to position anything below that height on the page. It won't screw up the printout if you do, but anything in those areas simply won't get printed.

In Figure 5 you'll see that I have placed a shaded "printable area" box on my A4 page (behind the **Print to Dot Matrix** requester). This is actually a real-life example. On my BJ-130 printer that box prints exactly as it is on the screen, with exactly the same top, bottom, left and right margins. The **X** and **Y Offset** dimensions were discovered by simply printing a page as described above and measuring the hardware margins with a ruler.

Finally, we come to *PageStream.* Again the relevant gadgets are found in two requesters (Figure 6). **Page Size** is easily discovered in the **New Document** requester, and you can select the exact size of paper you are using. But the important gadget is in the **Configure Printer** requester – the **Paper Size.** In here I've found that you may safely leave the paper size width the same as the page size width, but the paper size length must be set to your maximum printable length, the Y dimension in Figure 1. So if your printer has a hardware top margin of 5mm and a hardware bottom margin of 5mm, you must subtract 10mm from your **Page Size** length and enter this as your **Paper Size** length.

As in *Professional Page,* you need to manage the right-hand and bottom hardware margins yourself, and ensure that you don't position anything in those areas.

See what I mean about confusing? What *PageStream* calls **Paper Size** in the **Configure Printer** requester is actually the *page* size – the printable area in Figure 1 – at least as far as the length is concerned. What *Professional Page* calls **Output Page Size** in its **Print to Dot Matrix** requester is actually the *paper* size – the physical dimensions of the paper your are using. *Wordworth* and *Final Copy II* are equally guilty of confusing you with their **Page Size** gadgets, which are actually *paper* size dimensions.

Okay, you may think that complaining about this is splitting hairs, but now that you know how to get your page on the screen to print in the same position on the paper in the printer, at least you'll have some hairs left in your head to split. AS

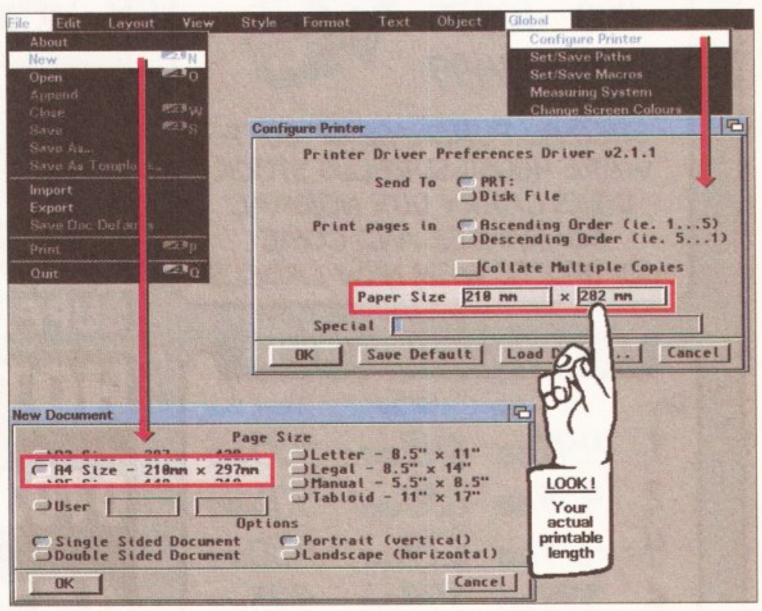


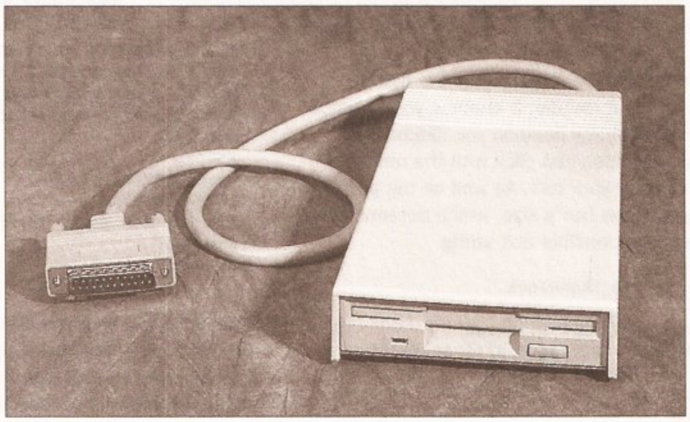
FIGURE 6 The secret to getting correctly positioned printed pages from PageStream is in entering the correct printable length (rather than the paper length) into the Paper Size requester in Configure Printer.

The Power to XL

Power Computing's XL high-density external drive is the first for the Amiga. Ian Wrigley tests it out.

Have you ever wished that your floppy disks could hold just that little bit more data? That a single floppy could take the whole of the 24-bit colour masterpiece you've just created in *Real 3D*, without having to use a utility like *LhA* to compress it? The simple fact is that in these days of ever-expanding program and data file sizes, 880K just isn't enough any more.

For Mac or PC users, there's been a solution available for some years now: the high-density floppy. High-density drives have been fitted as standard on all Macs since 1989, and it's almost impossible to buy a PC these days with a double-density drive – it's HD or nothing. Unfortunately, this is a standard that Commodore ignored until very recently; even now, only the A4000 is fitted with an HD drive – all the other models have only double-density drives. Now, though, there is Power Computing's new XL Drive, the first external high-density floppy drive available for the Amiga.



How to fit twice as much data on your disks, in two easy steps: 1, buy some high-density disks; 2, use them in Power's XL high-density drive.

GET IT SET UP

The drive itself looks identical to Power's 880 series drives, which are slightly deeper than many other external floppy units. The casing is plastic, rather than metal, and the overall feel is good and sturdy.

If you only want to read high-density disks, all you have to do is plug the drive into the back of your Amiga and power up. You can then read and write Amiga 880K disks as normal, and also read Amiga-formatted high-density disks. However, to take full advantage of the drive, you need to run the install program on the supplied floppy, which corrects some bugs in Workbench 2. If you do this, you can also write high-density disks – which means that you can store around 1.76Mb of data on each floppy.

The documentation supplied is rather sparse – seven pages of large-type A5, to be precise. Okay, you wouldn't expect much more with a normal plug-and-play floppy drive, but I'd have liked to see a little more detail on just what the patch does, whether there are any possible conflicts or problems involved in having it running and – most importantly – how to install it manually. The floppy will automatically place the patch on any connected hard drive, or on to a floppy if you wish – it adds a line to the startup-sequence and puts a new file in the **C:** directory – but there are no manual install instructions for anyone a little wary of auto-installs.

Once the patch has been put in place, re-boot your Amiga and you're able to write as well as read high density disks. Seeing a disk window on the Workbench that says "1673K free" is a sight to warm the cockles of your heart...

Reading and writing both double-density and high-density disks in the drive works perfectly – the drive automatically senses what kind of disk you've inserted. Likewise, formatting a disk is completely transparent after you've given the command – you don't have to specify whether it's DD or HD. The drive is totally compatible with that used in the A4000, so disks can be swapped with no problems.

PC COMPATIBILITY

The reason many people will buy this drive is so that they can read high-density disks from PCs. As you know, using *CrossDos* (which is supplied free with Workbench 2.1 or higher) or *MessyDos* (a shareware program) you can already read 720K disks created on PCs or (spit) Ataris. With the HD drive – assuming you're running Workbench 2.1 or above – you can now also read 1.44Mb PC disks. You need Workbench 2.1 because *CrossDos* is required – and older versions of the program have trouble with high-density disks. The process seems to work faultlessly, although a "read me" on the disk tells you that you should format the disks on a PC, rather than on the Amiga – this, apparently, is because of a problem with *CrossDos*. Reading and writing high-density PC disks is just a case of referring to them as being in unit **PC1:**, rather than **df1:**.

BUT WILL IT CATCH ON?

When high-density drives were first introduced on the PC and Mac, there was quite a lot of resistance to them. Disks tended to be a little more sensitive, and people found that in any batch of ten, at least one wouldn't format properly. This has been cured now, and (as long as you go for "branded" disks) you should find HD disks just as reliable as their DD cousins.

As for whether the whole high-density concept will catch on in the Amiga world... well, I have to say that it will take some considerable time to do so. There are millions of Amigas out there which can't read the format, and the balance will remain highly weighted against high-density for the foreseeable future – especially since Commodore have only included HD drives in their highest-end machine. This means that you'll still have to use normal, double density disks to transfer data with most other people. On the other hand, if you regularly transfer files to and from an A4000, or if you want to use the larger capacity disks for back-ups and the like, the Power XL Drive is an excellent option. AS

SO WHAT IS A HIGH-DENSITY DISK?

A standard double-density (DD) disk can store up to 880K when formatted on the Amiga; a high-density (HD) disk will hold up to 1.76Mb of data. High-density disks have the letters "HD" printed on them, and also have an extra hole on the opposite side of the disk to the normal write-protect tab.

One problem you might meet is trying to read a high-density disk which has been formatted to 880K. This happens if you format a high-density disk in a normal Amiga drive – the drive doesn't recognise the hole which signifies high density, so it formats it as a DD disk. Then when you put the floppy into the XL drive it senses that it should be high-density – and so can't read the DD information stored on it. To get around this, put a piece of sticky tape over the hole – this fools the drive into thinking that it's a normal 880K disk.

Likewise, if you insert a disk formatted as high-density into a standard Amiga disk drive, it won't be recognised as a proper disk. There's nothing you can do about this – you can only read it using a high-density disk drive.

SHOPPING LIST

Power XL Drive £99.95
From: Power Computing, Unit 8, Railton Road, Woburn Road Industrial Estate, Kempston, Bedford MK42 7PN.
☎ 0234 843388

CHECKOUT POWER XL DRIVE

Features ●●●●●
Even reads high-density PC disks – if you've got Workbench 2.1 or higher.

Documentation ●●●●○
A little more info on installing the patch manually would have been nice.

Ease of Use ●●●●●
Plug in and go. The software patch is auto-installed.

Speed ●●●●○
Compares well with most other floppy drives available.

Value for Money ●●●●●
Around twice the price of an external double-density drive, but more than twice as useful.

Overall rating ●●●●●
It's the first external HD drive for the Amiga, and many will find it invaluable.

Readers' Listings

Does your code make the grade? We'll pay £25 for your routines. This month two readers get their names in lights (well, 16 point Futura Book Bold Italic) – Tim Blacklock and Chris Cox.

First off this issue we have a selection of short AMOS programs contributed by Tim Blacklock, who hails from Sheffield. These are four useful little routines:

£25 WINNER

- **Clickable Buttons** – just the thing to use when designing a front panel display;
- **Input** – enables you to place a text input window anywhere on-screen;
- **Menu** – implement your own user-defined windows; and
- **Bounce** – bounces the screen up and down.

All of these work fine as stand-alone procedures, but will obviously be of most value if you want to incorporate them as service routines within larger programs that you write.

Note: the symbol ☛ in listings means do *not* type a return – the line is simply too long for our narrow columns

Assembler fans aren't neglected this month – we've printed Leedarian Chris Cox's neat little *ASClock* package. Occupying just 600 bytes, this is a compact implementation of a real-time clock display – if you're thinking of producing an alarm clock or diary program then use this to tell the time.

We're always interested to receive listings from readers – and remember, any that we print earn the sender the grand sum of £25. Send us a listing of the program along with a disk with copies of all the files on it (source code, object code if any, plus all the appropriate documentation). Remember, using any code written by someone else without permission is theft, so please enclose a signed declaration that the code is all your own work, and send the lot off to: **Listings, *Amiga Shopper*, 30 Monmouth Street, Bath BA1 2BW.**

The first of Tim's routines is called *Clickable Buttons*. It's entirely user-configurable and provides most of the code you require for producing your own front panels for applications.

```
'
' Clickable Buttons - By Tim Blacklock
'
BUTTONS=10
Dim ZX1(BUTTONS)
Dim ZY1(BUTTONS)
Dim ZX2(BUTTONS)
Dim ZY2(BUTTONS)
Global ZX1(),ZY1(),ZX2(),ZY2(),BUTTONS
Screen Open 0,320,256,8,Lowres
Palette $4,$FFF,$F00,$A00,$700,$F,$A,$0
Curs Off : Flash Off : Cls 0
Reserve Zone BUTTONS
Ink 3 : Bar 50,50 To 270,206
BUTTON[60,60,100,"CLICK ME!",1]
BUTTON[80,100,180,"WHY NOT CLICK HERE?",2]
BUTTON[60,140,170,"TRY CLICKING ME!!!!",3]
BUTTON[186,190,80,"EXIT..",4]
Do
  Repeat
  MZ=Mouse Zone
  Until MZ>0 and Mouse Key=1
  CLICK_BUTTON[MZ]
  If MZ=4 Then End
Loop
Procedure BUTTON[X,Y,WIDTH,_TEXT$,_ZONE]
  TX=(X+(WIDTH/2))-(Text Length(_TEXT$))/2
  Ink 3
  Bar X,Y To X+WIDTH,Y+13
  Ink 7
  Box X,Y To X+WIDTH,Y+13
  Ink 7,3
  Text TX,Y+9,_TEXT$
  Ink 2
  Draw X+1,Y+12 To X+1,Y+1 : Draw To ☛
X+WIDTH-1,Y+1
  Ink 4
  Draw To X+WIDTH-1,Y+12 : Draw To X+1,Y+12
  Set Zone _ZONE,X,Y To X+WIDTH,Y+13
  ZX1(_ZONE)=X
  ZY1(_ZONE)=Y
  ZX2(_ZONE)=X+WIDTH
  ZY2(_ZONE)=Y+13
End Proc
Procedure CLICK_BUTTON[_ZONE]
  X1=ZX1(_ZONE) : Y1=ZY1(_ZONE)
  X2=ZX2(_ZONE) : Y2=ZY2(_ZONE)
  Get Sprite 1,X1,Y1 To X2,Y2
  Ink 4 : Draw X1+1,Y1+11 To X1+1,Y1+1 : ☛
Draw To X2-1,Y1+1
  Ink 3 : Draw To X2-1,Y2-1 : Draw To X1+1,Y2-
1
  Plot X1+1,Y2-1 : Plot X2-1,Y1+1
  Screen Copy Screen,X1+2,Y1+2,X2-2,Y2-3 To ☛
Screen,X1+2,Y1+3
  Wait 10
  Paste Bob X1,Y1,1
End Proc
```

Here's another simple routine – as the name suggests, an input routine. It enables you to place a text input box at any position you like on the screen. You can then just click with the mouse in the box and enter your text. As well as the position, you can specify the box's size, which determines the length of the possible text string.

```
'
' Input - By Tim Blacklock
'
Screen Open 0,320,256,8,Lowres
Palette $4,$FFF,$F00,$A00,$700,$F,$A,$0
Curs Off : Flash Off : Cls 0
Reserve Zone 1
Global RET$
MESS$="CLICK IN THIS BOX THEN TYPE!"
Ink 1 : Box 16,40 To 303,52
Set Zone 1,16,40 To 303,52
Ink 1,0
Text 19,49,MESS$
Do
  Repeat
  Until Mouse Key=1 and Mouse Zone=1
  _INPUT[19,42,MESS$,34,0]
  MESS$=RET$
Loop
Procedure _INPUT[X,Y,_INPUT$,TAX,TYPE]
  Hide On
  XT=(X)+Text Length(_INPUT$)
  YT=Y
  CRS=Len(_INPUT$)
  Set Text 0
  Clear Key
  If TYPE=0
  ' Numbers+letters etc.
  T1=31
  T2=124
  End If
  If TYPE=1
  ' Just numbers
  T1=47
  T2=58
  End If
  Repeat
  Ink 1 : Bar XT,YT To XT+8,YT+8
  While K$=""
  K$=Inkey$
  Wend
  If Asc(K$)<>0
  KEY=Asc(K$)
  End If
  If(KEY=8 and CRS>0)
  Ink 0 : Bar XT,YT To XT+8,YT+8
  Dec CRS
  Add XT,0-(Text Length(Mid$(_INPUT$,CRS,1)))
  _INPUT$=Mid$(_INPUT$,1,CRS)
  End If
  If(KEY>T1 and KEY<T2 and KEY<>42 and
CRS<TAX)
  Ink 0 : Bar XT,YT To XT+8,YT+8
  Ink 1 : Text XT,YT+7,Chr$(KEY) : ☛
_INPUT$=_INPUT$+Chr$(KEY) : Inc CRS
  Add XT,Text Length(Chr$(KEY))
  End If
  K$=""
  Until KEY=13
  RET$=_INPUT$
  Ink 0 : Bar XT,YT To XT+8,YT+8
  Show On
End Proc
```

Now we come to Tim's third routine. As with the previous two this short piece of code will help you to easily create your own user interface using a menu requester. You specify a list of menu commands in **A$** (separating each with a *) and provide the other parameters – *x* and *y* positions, width and the rest – in the menu call statement.

```
'
' Menu - By Tim Blacklock
'
Screen Open 0,320,256,8,Lowres
Palette $4,$FFF,$F00,$A00,$700,$F,$A,$0
Curs Off : Flash Off : Cls 0
Reserve Zone 10
Global OPTION
A$="Start Next Match*View League
Tables*Finance*Game Configuration*"
A$=A$+"Team Record*Practice Match*Exit"
MENU[70,40,180,108,"Select An Option",A$]
Print At(1,1);"Option Number";OPTION;" ☛
returned."
Procedure
MENU[X,Y,WIDTH,HEIGHT,HEADING$,_MENU$]
  Reset Zone
  Ink 1
  Bar X,Y To X+WIDTH,Y+HEIGHT
  Ink 7
  Box X,Y To X+WIDTH,Y+HEIGHT
  _CENTRE_TEXT[X,Y+12,WIDTH,HEADING$]
  TS=1
  _ZONE=1
  YT=Y+30
  _EXIT=0
  Repeat
  TF=Instr(_MENU$,"*",TS)
  If TF=0 Then TF=Len(_MENU$)+1 : _EXIT=1
  NEW$=Mid$(_MENU$,TS,TF-TS)
  _CENTRE_TEXT[X,YT,WIDTH,NEW$]
  Set Zone _ZONE,X,YT-8 To X+WIDTH,YT+3
  TS=TF+1
  Add YT,12
  Inc _ZONE
  Until _EXIT=1
  OPTION=1
  LS=1
  HILIGHT[X,Y,WIDTH,7,OPTION]
  Repeat
  OPTION=Mouse Zone
```

```
 If OPTION<>LS and OPTION>0
 HILIGHT[X,Y,WIDTH,1,LS]
 HILIGHT[X,Y,WIDTH,7,OPTION]
 LS=OPTION
 End If
 Until Mouse Key=1 and OPTION>0
End Proc
Procedure _CENTRE_TEXT[X,Y,WIDTH,_TEXT$]
 Ink 7,1
 TX=(X+(WIDTH/2))-(Text Length(_TEXT$))/2
 Text TX,Y,_TEXT$
End Proc
Procedure HILIGHT[X,Y,WIDTH,_COLOUR,_ZONE]
 Ink _COLOUR
 Y=(Y+22)+((_ZONE-1)*12)
 Box X+2,Y To X+WIDTH-2,Y+11
End Proc
```

Now, an example of the simple effects you can add to your own programs. Tim uses a formula based on a sine curve to bounce the screen up and down.

```
'
' Screen Bounce - By Tim Blacklock
'
Degree
Screen Open 0,320,256,16,Lowres
Screen Open 1,320,80,16,Lowres
Curs Off : Flash Off : Cls 0
Print At(1,1);"SCREEN BOUNCE PROGRAM"
Do
 For A=-100 To 100
 Y#=Sin(A)
 BOUNCE[Y#*50+100]
 Next A
 For A=100 To -100 Step -1
 Y#=Sin(A)
 BOUNCE[Y#*50+100]
 Next A
Loop
Procedure BOUNCE[Y]
 Screen Display 1,,Y,,
End Proc
```



For your further delectation and delight this month we also have an assembler routine contributed by Chris Cox from Leeds. Chris also gets a cheque for £25 and the fame of appearing in our listings pages. *AS Clock* is a neat and compact real-time clock – it occupies just 600 bytes – that can be run as a "stand-alone" utility or an ideal starting point from which to build a more complex application such as a diary program.

```
   opt          o+                      ;Optimise
On
*AS Clock V1.01
*Assembling Time 18:36:19 - 8/6/93
*Assembled in DevPac 2 but also works ☛
for A68K Users
    incdir      ":Include/"
    include     "exec/exec_lib.i"
    include     "graphics/graphics_lib.i"
    include     "graphics/gfxbase.i"
    include     "intuition/intuition_lib.i"
    include     "intuition/intuition.i"
    include     "libraries/dos_lib.i"
    include     "libraries/dos.i"
    include     "misc/easystart.i"      ;For WB
Time_Out        equ     10              ;Time ☛
to Wait
WINDOWFLAGS     equ
WINDOWCLOSE!SMART_REFRESH!WINDOWDRAG!☛
WINDOWDEPTH
TaskPri             equ     -1          ;Our ☛
task priority

*Find out Task, Set Priority and Open
Libraries
InitApp:        move.l      a4,a1       ;Get ☛
out task
   moveq            #TaskPri,d0         ;Our ☛
task Priority
  CALLEXEC      SetTaskPri              ;Set ☛
our Priority
*OpenLibrary:a1=Pointer to Lib Name ; ☛
d0=Lib Version (0=Any)
OpenDOS:        lea         DOSName(pc),a1
   moveq            #0,d0
   CALLEXEC     OpenLibrary
   move.l               d0,_DOSBase     ;Save ☛
for Later
   beq                  Quick_End
;Check ☛
if opened
OpenInt:        lea         IntName(pc),a1
   moveq                #0,d0
   CALLEXEC     OpenLibrary
   move.l       d0,_IntuitionBase       ;Save ☛
for Later
   beq                  CloseDOS
OpenGfx:        lea         GFXName(pc),a1
   moveq                #0,d0
   CALLEXEC     OpenLibrary
   move.l               d0,_GfxBase     ;Save ☛
for Later
   beq                  CloseInt

*Open intuition Window ; 11*124 Pixels
*a0=OSArgs ; d0=WindowHandle
OpenWindow:     lea         Window_Defs(pc),☛
a0 ;Pointer to Defs
   CALLINT              OpenWindow
   move.l               d0,Window_Handle ☛
;Save for Later
   beq.s                CloseGFX        ;Dint ☛
Open
   move.l               Window_Handle,a0
   move.l               wd_RPort(a0),R_Port ☛
;Save RastPort
   move.l               wd_UserPort(a0),U_Port
☛
;Save UserPort

PrintTitle:     move.l      Window_Handle,☛
a0                      ;WindowHD in a0
   suba.l               a1,a1           ;No ☛
Window Title
   lea                  Scrn_Title(pc),a2
;☛
Screen Title
   CALLINT              SetWindowTitles
;Set ☛
Title
*Main Loop
*Check for Close Gadget and Update Clock

M_Loop:                 bsr.s           ☛
UpdateClock
   move.l               U_Port,a0
   CALLEXEC     GetMsg                  ;☛
Message ?
   tst.l                d0
   beq.s                NoMessage       ;Nope
   move.l               d0,a1
   CALLEXEC     ReplyMsg                ;Say ☛
Thanks to intuition
   bra.s                CloseDown       ;Yes!
NoMessage:      moveq       #Time_Out,d1
   CALLDOS              Delay
   bra.s                M_Loop
;Wait ☛
a Bit

*Close Window and All Libraries
CloseDown:      move.l      Window_Handle,a0
   CALLINT              CloseWindow
CloseGFX        move.l      _GfxBase,a1
   CALLEXEC     CloseLibrary            ;☛
Close Gfx Lib
CloseInt        move.l      _IntuitionBase,a1
   CALLEXEC     CloseLibrary            ;Close ☛
Int lib
CloseDOS        move.l      _DOSBase,a1
   CALLEXEC     CloseLibrary            ;Close ☛
Dos Lib
Quick_End       moveq       #0,d0       ;☛
Return Code
   rts
*Update Clock
*Uses DOS's DateStamp function to find Time
*and then Gets Converted to Decimal and
*then Shoved into Window Title
UpdateClock:    move.l      #ClockBuffer,d1
   CALLDOS              DateStamp
   lea                  ClockBuffer(pc),a1
   addq                 #4,a1
   move.l               (a1),d3
   divu                 #60,d3
;Get Hour
   move.w               d3,d0
   ext.l                d0              ;Make ☛
Long Word
   lea                  Window_Title(pc),a0
   bsr.s                Decimal_Convert
;Shove ☛
Hour in Title
   swap                 d3              ;Find ☛
Remainder
   move.w               d3,d0
   ext.l                d0              ;Make ☛
Long Word
   lea                  Window_Title+3(pc),a0
   bsr.s                Decimal_Convert
   addq                 #4,a1
   move.l               (a1),d1
   divu                 #50,d1
;Find ☛
Second
   move.w               d1,d0
   ext.l                d0              ;Make ☛
Longword
   lea                  Window_Title+6(pc),a0
   bsr.s                Decimal_Convert
;Put ☛
Second in Title

*This routine uses GFXLibrary to Print Clock

PrintClock      move.l      R_Port,a1;Get ☛
Windows RastPort
   moveq                #25,d0
;X Pos
   moveq                #8,d1           ;Y Pos
   CALLGRAF     Move
   move.l               R_Port,a1
   moveq                #1,d0           ;Pen ☛
Color
   CALLGRAF     SetAPen
   move.l               R_Port,a1       ;☛
RastPort in a1
   lea                  Window_Title(pc),a0
;☛
Pointer to Text
   moveq                #Window_Title_SIZEOF,☛
d0              ;Length
   CALLGRAF     Text                    ;Print It
   rts
;End ☛
Routine

*Decimal Convert
*Converts 2 Digits
*d0=Number ; a0=Buffer
Decimal_Convert:moveq       #10,d1      ;Max N∞
   moveq                #2-1,d2         ;Times ☛
to Loop
DecLoop                 divu            d1,☛
d0              ;Divide it
   add                  #$30,d0
;Make ☛
Digit
   move.b               d0,(a0)+        ;Put ☛
in a0
   clr                  d0
   swap                 d0
   divu                 #10,d1
;Next
   dbra                 d2,DecLoop
   rts
*All Variable etc

DOSName:        dc.b    "dos.library",0
   even
GFXName:        dc.b    "graphics.library",0
   even
IntName:        dc.b    "intuition.library",0
   even
_DOSBase:       dc.l    0
_IntuitionBase:         dc.l    0
_GfxBase:       dc.l    0
R_Port:                 dc.l    0
U_Port:                 dc.l    0
Window_Handle:  dc.l    0
ClockBuffer:    dcb.b   12,0
   even
Window_Defs:    dc.w    0                       ;X Pos
   dc.w         0                               ;Y Pos
   dc.w         124                             ;X Size
   dc.w         11                              ;Y Size
   dc.b         -1                              ;Pens
   dc.b         -1                              ;Pens
   dc.l         CLOSEWINDOW                     ;IDCMP ☛
flag(s)
   dc.l         WINDOWFLAGS                     ;Flags
   dc.l         0                               ;No ☛
Gadgets
```

AS

SAILING THROUGH C

You can access and create records in your address book, but how do you edit them? Toby Simpson explains.

Note: the symbol ☛ in listings means do not type a return – the line is simply too long for our narrow columns

We did quite a lot of typing last time in order to get a good skeleton program running, ready for other bits to be added on to it. It was a simple program that didn't allow us to edit any of the names and addresses already entered into our data file.

What we badly need is a function that enables us to edit existing records. This should be reasonably advanced; it should enable us to select which field we are going to edit, saving us from having to type in the entire record again.

How will this edit-a-record function work? Before writing a new function of this sort of size, it's a good idea to do some planning. The question to ask is: what should our function do?

- It should prompt us for a record number.
- If this record already exists, it should display what its current contents are, with each field numbered down the left hand side (1: Name 2: Address Line 1 etc).
- It should prompt us for a field number to edit and enable us to change it, showing us the new state of the whole record afterwards.
- We should be able to then either save this record, together with changes, or forget all changes if we are not happy.

The first thing todo is integrate a new function into the existing system. This is straightforward, and although there are quite a lot of files, you'll soon get to know your way around them. Our main code module, **address_book.c**, is responsible for showing a menu, and then calling a function depending on which key is pressed. We want to add another menu option:

E – Edit an existing Record

The user pressing **E** should make the program call our new function **edit_record()**. Load up **address_book.c** and see if you can make the changes yourself. The actual changed code is shown in listing 1. You'll then need to add a new function prototype to our file **functions.h**, and this will be:

```
void edit_record(void); /* Edit a
record */
```

In addition, I've also changed the version number in **address_book.h** from 1.00 to 1.01.

Now we have the mechanics installed for our new function, we have to start writing it! This will require new code to be added to **address_functions.c**. Load this file up, and add a new function header to the end of it:

```
/* void edit_record(void);
This function edits an existing
record. */
void edit_record(void)
{
}
```

Now you can compile the program, and check that it still runs. If you recall, you compile your program from the Shell using:

```
execute make_app
```

When the program is running, your pressing **E** from the menu should appear to do nothing. All it does in reality is call the **edit_record** function which returns without any effect.

Fix any bugs that you get now, so that you are able to concentrate on adding the new function. The new function itself is shown in listing 2.

To save us duplicating too much code from the other functions, and to help us in the future, an additional three functions have been written. The prototype for the first of these is:

```
void show_record_data(char ☛
*record_data, long record_number);
```

It shows us that this routine takes two parameters, one a pointer to characters called **record_data** and the other a long integer called **record_number**. To use this function, we put a valid record into memory and pass a pointer to it, along with the actual record number to **show_record_data**.

The second function is:

```
BOOL read_record_data(char ☛
*record_data, long record_number);
```

It reads the specified record into an area of memory pointed to by **record_data**. We can see from its prototype that it returns a boolean value, in other words either **TRUE** or **FALSE**. In this case it returns **TRUE** for success, or **FALSE** for failure. The **read_record_data** function has a partner called **write_record_data**, whose prototype looks like this:

```
BOOL write_record_data(char ☛
*record_data, long record_number);
```

We'll be using the **read_record_data** and **write_record_data** functions a lot in the future once we get our window going. Their function protoypes must also be added to the **functions.h** file. Listing 3 shows how the complete file should look once the changes have been made.

Our new function **edit_record** is a temporary addition to the program. When you're developing large programs, you tend to find that you'll install a whole bunch of routines just so that you can do things quickly. These will be replaced by more advanced routines later on, once the basics are working.

It's important for us to be able to edit information so that we can create data to use in our address book for testing purposes. The addition of the editing function actually gives us a totally working address book program. You could, if you had the patience, feed all of the names and addresses you wanted to store into this program now (and you'd still be able to access this data in a few months' time when we're nearing completion of the program).

Edit_record is quite simple, and does not introduce any new programming techniques. We have, however, used some short-cuts to reduce code size. One of them is in the part where the user is asked to enter a field number to edit, or to type **S** to save and quit or **A** to abort. Our fields are numbered from 0 to **TOTAL_FIELDS**-1 internally, but to

LISTING 1: CHANGES TO ADDRESS_BOOK.C

Insert the following to replace the printf statement at line 30, which shows the main menu:

```
printf("\nMain Menu\n\n"
       "R - Read a record\n"
       "C - Create a new ☛
record\n"
       "E - Edit an existing ☛
record\n"
       "Q - Quit Program\n\n"
       "Enter your choice:");
```

This adds the **E** option to the menu. We also need to add some code to call our new function, **edit_record**, so we'll add a couple of lines in the switch statement at line 44:

```
    case 'E':
      edit_record();
      break;
```

LISTING 3: THE NEW PROTOTYPES FILE

We must add prototypes for the new functions to our prototype definition file **functions.h**. It now looks like this:

```
/* functions.h, containing
prototypes for all our
functions */
/* Prototypes for our test
routines */
void read_record(void); /*
Create a new record */
void create_record(void); /*
Read a record */
void edit_record(void); /*
Edit a record */

BOOL read_record_data(char ☛
*record_data, record_number);
BOOL write_record_data(char ☛
*record_data, record_number);
void show_record_data(char ☛
*record_data, long ☛
record_number);
```

LISTING 2: THE NEW ADDRESS_FUNCTIONS.C

Add the following to the end of **address_functions.c** from last month's *Amiga Shopper.*

```
/* void edit_record(void);
This function edits an existing
record */
void edit_record(void)
{
  char temp_line[512];
  char command;
  long record_number;
  char record[RECORD_LENGTH];
  BOOL finished_edit = FALSE;
  long field_number;
  int loop;
  long field_offset;
  char *field_pointer;
  /* Input a record number */
  printf("\nWhich record number ☛
to edit? ");
  gets(temp_line);
  record_number = atol(temp_line);
  /* Read this record in */
  if (!(read_record_data(☛
&record[0], record_number)))
    {
    printf("Failure to read ☛
record %ld\n", record_number);
    return;
    }
  /* Do our edit here */
  field_pointer = record;
  while(!finished_edit)
    {
    /* Show fields with numbers */
    show_record_data(&record[0], ☛
record_number);
    /* Now prompt the user for a ☛
field number */
    printf("\nEnter a field ☛
number 1 - %ld, S to Save and ☛
Exit, or A to Abort: ",
      TOTAL_FIELDS);
    gets(temp_line);
    field_number = ☛
atol(temp_line);
    if (field_number > 0 && ☛
field_number < TOTAL_FIELDS+1)
      {
      /* Edit this field */
      field_number--; /* Adjust ☛
it from 0-TOTAL_FIELDS-1 */
      printf("Enter new field ☛
data\n%-30s:",
field_names[field_number]);
      gets(temp_line);
      /* Find offset inside record
of this field */
      field_offset = 0;
      for (loop = 0; loop < ☛
field_number; loop++)
        field_offset = field_☛
offset + field_lengths[loop];
      /* Copy new data across */
      strcpy(field_pointer+☛
field_offset, temp_line);
      /* Make sure we don't
accidentally do something */
      temp_line[0] = ' ';
      }
    /* This is out of
address_book.c, converts first
character to upper case and uses
it as a command. */
    command = temp_line[0];
    if (islower(command))
      command = command - 0x20;
    switch(command)
      {
      case 'S':
        /* Save selected. Save
record, then quit */
        if (!(write_record_☛
data(&record[0], record_number)))
          {
          printf("Failure to wri☛
te record %ld\n", record_number);
          return;
          }
        finished_edit = TRUE;
        break;
      case 'A':
        /* Abort selected, simply
quit, don't save */
        finished_edit = TRUE;
        break;
      }
    }
  /* All done, return to menu */
  return;
}
/*BOOL show_record_data(char
*record_data, record_number)
* Function to show a specified
record on the screen.
* Records are numbered from 1 (In
reality they're from 0). */
void show_record_data(char ☛
*record_data, long record_number)
{
  int loop;
  /* Now display this record on
the screen */
  printf("\nRecord number ☛
%ld:\n\n", record_number);
  for (loop = 0; loop < ☛
TOTAL_FIELDS; loop ++)
    {
    /* Show field name and data */
    printf("%ld: %-30s%s\n", loop☛
+1, field_names[loop], ☛
record_data);
    /* Go to next field */
    record_data = record_data + ☛
field_lengths[loop];
    }
  return;
}
/* BOOL read_record_data(char
*record_data, record_number)
* Function to read a specified
record into a supplied area of
memory. Does not print anything,
returns FALSE if it fails or TRUE
if it succeeded. */
BOOL read_record_data(char ☛
*record_data, record_number)
{
  BPTR file_channel;
  long data_read = 0;
  /* Open our file */
  if (!(file_channel = ☛
Open("addresses", MODE_OLDFILE)))
    return FALSE;
  /* Seek to the correct position
of this file */
  data_read = Seek(file_☛
channel, (record_number * RECORD☛
_LENGTH), OFFSET_BEGINNING);
  if (data_read == -1)
    {
    Close(file_channel);
    return FALSE;
    }
  /* Read in our data */
  data_read = Read(file_chan☛
nel, record_data, RECORD_LENGTH);
  if (data_read < RECORD_LENGTH)
    {
    Close(file_channel);
    return;
    }
  /* Now close up the file */
  Close(file_channel);
  return TRUE;
}
/* BOOL write_record_data(char
*record_data, record_number)
* Function to write a specified
record from a supplied area of
memory. Does not print anything,
returns FALSE if it fails or TRUE
if it succeeded. */
BOOL write_record_data(char
*record_data, record_number)
{
  BPTR file_channel;
  long data_written;
  /* Open our file */
  if (!(file_channel = Open(☛
"addresses", MODE_OLDFILE)))
    return FALSE;
  /* Seek to the correct position
of this file */
  data_written = Seek(file_chann☛
el, (record_number * RECORD_☛
LENGTH), OFFSET_BEGINNING);
  if (data_written == -1)
    {
    Close(file_channel);
    return FALSE;
    }
  /* Read in our data */
  data_written = Write(file_chan☛
nel, record_data, RECORD_LENGTH);
  if (data_written < ☛
RECORD_LENGTH)
    {
    Close(file_channel);
    return;
    }
  /* Now close up the file */
  Close(file_channel);
  return TRUE;
}
```

save the user some time, they are numbered from 1 to **TOTAL_FIELDS** on screen.

Once the user has entered an option we can call the ANSI function **atol** which converts ASCII strings to longword integers. If the string holds a number, the routine will work. If not, it simply returns 0. We use this behaviour to reduce the size of code, because we don't need to check for the difference between numbers and single character commands:

```
  printf("\nEnter a field num☛
ber 1 - %ld, S to Save and Exit,☛
 or A to Abort: ", TOTAL_FIELDS);
  gets(temp_line);
  field_number = atol(temp_line);
  if (field_number > 0 && ☛
field_number < TOTAL_FIELDS+1)
    {
    /* Edit this field */
    field_number--; /* Adjust it
from 0-TOTAL_FIELDS-1 */
    printf("Enter new field ☛
data\n%-30s:",
field_names[field_number]);
```

Notice how we remember to re-adjust the field number back by subtracting one from it.

The line after that one contains a **printf** call. I thought I'd explain briefly in more detail about the formatting options that printf has. In this line we're using

```
%-30s
```

So what does it all mean? Well, the – means "left hand justify in field." This ensures that our variable is printed up against the left hand side of the field, with blank spaces, if any, being printed to the right. The **30** is the field length. If this is omitted, then the field takes up as much space as it needs; if supplied, the field is padded up with spaces to this length. The **s** means that the variable to be printed is a string.

There are many more ways in which these options can be used. For example, if we had a computer game with a score and we wanted to show this on the screen we might write:

```
printf("Score: %ld", score);
```

The result would look messy. The best way to do it, as any games programmer will tell you, is to have loads of leading zeros!

```
printf("Score: %05ld", score);
```

For a score of 0, this would print: `00000`.

The **0** straight after the **%** means "pad out with leading zeros." Without it, **%5ld** would have just shown: `5`, not nearly as impressive.

This month we've laid the majority of the groundwork for getting a better user interface set up. Next month we'll be looking a bit at Intuition, and some of the features it offers us, such as the facility to open screens and windows.

This means you'll need Commodore's Include files. You can get these by writing a cheque for £25, made payable to Commodore Business Machines UK Ltd, and sending it to: Developer Support, Commodore Business Machines UK Ltd, Commodore House, The Switchback, Gardner Road, Maidenhead, Berks. SL6 7XA. Ask for the Native Developers' Toolkit. You'll get other goodies as well, including example source code and some debugging tools.

You'll also get the Includes if you send off your $50 registration fee for DICE. DICE is the shareware compiler we are using for the whole of this series; it is available from PD libraries on Fred Fish disk 491.

If you can't wait till next month and you want to improve your programming, try and simplify the **read_record** routine given last month so that it uses the new **read_record_data** and **show_record_data**. Do give it a go – there's nothing like experimentation for improving your programming. AS

• Toby Simpson is available on Electronic Mail over the internet at toby@cix.compulink.co.uk, or on CIX as "toby". The current source code for the address book application is also available on CIX in the amigashopper conference.

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AMOS Action

It's now time to put AMOS to serious use. Jason Holborn introduces the first part of his tutorial showing you how to create a fully-featured screen painting package.

Everyone knows what a capable language AMOS can be for programming games and demos, but its usefulness doesn't stop there. Since its release way back in 1990, AMOS has been applied to a wide range of programming tasks – educational software, scientific analysis, fault finding, databases, word processors, spreadsheets, morphing and fractal landscape generators are only a small selection of the types of program that have received the AMOS treatment. The fact is, AMOS is such a flexible language that there's very little (if anything) that it can't handle!

So to prove the point this month we're intoducing a step-by-step tutorial that will show you how to program a fully working and really quite usable paint program in AMOS (and yes, it is Easy AMOS compatible!). What's more, because our paint program will be written in a modular fashion, there's absolutely no reason whatsoever why you couldn't build upon it yourself once the program is finished. Simply by inserting new procedures into *ASPaint* (catchy name, eh?), you'll be able to extend it immeasurably.



Here's our screen format selector in all its glory! Type in the listing printed within these pages and you too can have this lovely selector running on your Amiga.

DESIGNER PROGRAMS

So where do we start? Well, as with all programming projects, the first thing we need to do is to analyse our requirements. We already know that we are going to be writing a paint program, so it should be fairly easy to build up a list of the sort of features that the program will need. Our paint program should therefore include the following features:

Note: the symbol ☛ in listings means do not type a return – the line is simply too long for our narrow columns

• Multiple screen modes – Our paint program should be flexible enough to handle more than one screen mode. Writing a 32-colour low resolution paint program is fine providing this is the only screen mode you ever need to use, but what happens if you only need 16 colours? And how about supporting medium and high resolution screen modes? Thankfully our paint program will be able to handle them all (apart from HAM and the new AGA modes, that is) and will even allow you to control the number of colours used.

• Ease of use – No matter how powerful your paint program, it must also be very easy to use. *DPaint* is a perfect example of this: thanks to its well-designed icon strip that runs down the right hand side of the screen, most of *DPaint*'s operations can be accessed without having to wade through acres of complex menus and keyboard short cuts. A paint program is designed for artists, not programmers, so it should expect very little from the user in terms of computer literacy.

Our paint program will follow the same route as *DPaint* by employing an icon strip that will give the user instant access to the program's many painting functions. To make life easier though, ours will appear on a separate medium resolution screen which will run horizontally across the bottom of the display, though it will be movable so you can reposition it anywhere up and down the display.

• Load and save – If you've drawn a picture that you're particularly proud of, our paint program will also enable you to both save and load it to disk in standard IFF format. AMOS already provides the commands to handle this automatically, so the coding will be fairly simple.

• Print – Also included will be a routine to dump the screen to a printer, therefore enabling you to have a copy of your picture on paper.

• Configurable palette – With 4,096 colours for the user to choose from, our paint program will also feature a palette editor similar to the one built into *DPaint*. With it you will be able to change any of the colours used. This too must be flexible enough to handle any screen resolution that we care to chuck at it. After all, there's no point in having to write a different palette editor for every possible screen resolution/palette combination!

• Drawing tools – All paint programs must have a healthy selection of basic painting tools. Our paint program will have all the usual basic painting tools plus a few more besides. Expect to see freehand draw, line, box, circle, airbrush and polygon tools – all of which will be capable of using a variety of different brush shapes and sizes. There will also be a text facility in there too, allowing you to add text directly into your pictures.

• Brush tools – Like *DPaint*, our paint program will be able to pick up any area of the screen as a brush which can then be pasted down at any point on the screen. AMOS provides us with some pretty comprehensive brush scaling commands too, so these will be incorporated.

Right, let's get stuck into some AMOS coding.

If you load up a commercial paint program such as *DPaint*, the first thing you'll come across is the screen format selector. It enables users to choose the screen resolution and the number of colours that they wish to paint with. Our paint program will need one of these too, so this month let's concentrate entirely on the code required to get a fully working screen format selector up and running.

The code printed in the box below doesn't require access to any external files, so you can simply type it in. Anyway, let's take a look at the code and how it works. (Note that the numbers printed in a different typeface at the beginning of many of the program lines are present for reference purposes only: don't type

LISTING

Here's the first part of our paint program, catchily entitled *ASPaint*. So far all it does is ask the user which screen mode and how many colours are required, but we'll be building on it in the months to come.

When you come to type it in, don't forget that the numbers shown at the beginning of some lines (printed in a different typeface) are for reference only, and should not be entered.

```
' *** AS Paint V 0.1
' *** Written by Jason Holborn
' *** For Amiga Shopper
' *** Easy AMOS Compatible!!!
'
1. SCRMOD=1
2. CLOURS=9
3. Dim GADG(20,4),PALTTE(32)
4. Global SCRMOD,CLOURS,GADG(),PALTTE()
 '
 MAIN:
5.   _SCREENFORMAT
6.   _OPENSCREEN
   '
7.   End
 '
 '
 Rem *** _SCREENFORMAT Procedure
 Rem *** Asks the user what screen format ☛
they want
 '
8. Procedure _SCREENFORMAT
9.   Screen Open 0,320,210,4,LOW
   Flash Off : Curs Off : Cls 0
10. Palette $0,$FFF,$975,$642
   '
   Rem *** Build up screen display
   '
11. Ink 2 : Bar 20,10 To 290,200
   Ink 3 : Box 20,10 To 290,200
   Pen 1 : Paper 2
```

them in as part of the program itself.)

1. The **SCRMOD** variable is used to hold the current screen mode setting. This is a number between 1 and 4 that directly equates to the buttons that we'll be defining later within the listing. A value of 1 denotes a low resolution screen, 2 for a interlaced low resolution screen, 3 for a high-resolution, non-interlaced screen and 4 for a high-resolution interlaced screen.

2. The **CLOURS** variable starts life simply as a pointer to the currently selected colours button, but it later changes into a value that directly denotes the number of colours that the user has selected. We'll need this variable when we come to write the colour palette requester.

3. Two arrays need to be defined at this point to hold the palette information (**PALTTE**) and the coordinates of the various gadgets (**GADG**) that we will be defining on the screen selector. The **GADG** array will be used quite extensively within our paint program to allow gadgets to be defined and monitored with ease.

4. All four of these variables are then made global so that they can be accessed by all the procedures within our program.

5. Once everything has been set up, the screen format selector procedure is called by the main program. This is performed at the start of the program so that the selector appears as soon as the program is run.

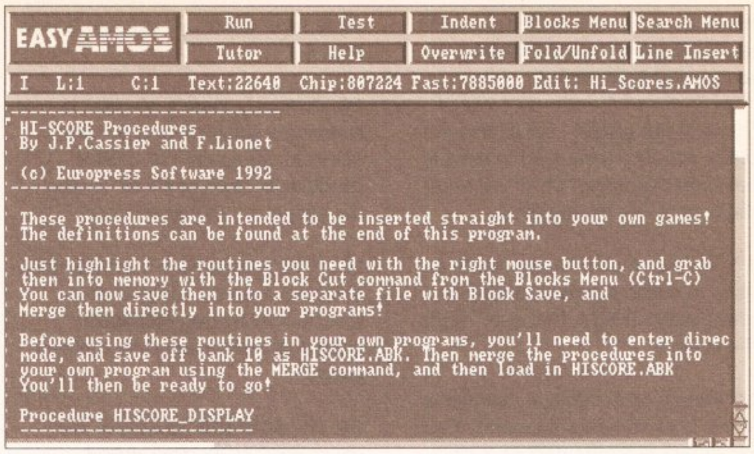
6. Once the user has selected a suitable screen format combination, the **_OPENSCREEN** procedure is called to open up the screen in the format that the user specified.

7. Well, that's the end of the main program for the time being.

8. The start of the **_SCREENFORMAT** procedure.

9. The first thing we need to do is to open up a screen which is used to display the selector. In this particular case, we open up a 4-colour low resolution screen. AMOS's automatic colour cycling and text cursor is then turned off and the screen is cleared using colour 0.

10. The screen's colour palette is then defined using the AMOS **Palette** command. This allows us to define all four of the screen's colours using a single command. The colour settings are expressed as hexadecimal values.



You may be surprised to learn just how powerful Easy AMOS, AMOS's little brother, is. Our paint program, for example, is fully Easy AMOS compatible!

11. Now for the fancy bit. After setting the colour to use for drawing operations, a filled box is then drawn onto the screen. An outline is then drawn around it to give it a more pleasing appearance. This box will form the backdrop for our colour selector.

12. The next few lines of code then draw all the various lines of text into the selector box. Note how we use the AMOS **Centre** command to ensure that everything is lined up correctly.

13. With all the text drawn onto the screen, we now need to set up all the various gadgets using AMOS' powerful zones facility. Zones are simply areas of the screen which can be defined as "hot points". Before we can do this, however, we need to tell AMOS how many zones we are going to define using the **Reserve Zone** command.

14. The program then enters a loop that is used to define all ten of our gadgets.

15. Each gadget has four co-ordinates associated with it which define the four points of the rectangular area that the gadget will cover. These four coordinates are

LISTING LISTING LISTING

```
12. Locate 1,3 : Centre "AMIGA SHOPPER ☛
PAINT"
   Locate 1,6 : Centre "Screen Format"
   Locate 1,9 : Centre "Low Resolution ☛
       320x256"
   Locate 1,11 : Centre "Low Resolution ☛
Laced  320x512"
   Locate 1,13 : Centre "Medium Resolution ☛
     640x256"
   Locate 1,15 : Centre "High Resolution ☛
     640x512"
   Locate 1,18 : Centre "2   4   8   16   32"
   Locate 1,22 : Centre "Let's Get ☛
Painting..."
   '
   Rem *** Draw gadget boxes
   '
   Ink 3
13.   Reserve Zone 10
14.   For A=1 To 10
15.     Read GADG(A,0),GADG(A,1),☛
GADG(A,2),GADG(A,3)
16.     Box GADG(A,0),GADG(A,1) To ☛
GADG(A,2),GADG(A,3)
17.     Set Zone A,GADG(A,0),GADG(A,1) To ☛
GADG(A,2),GADG(A,3)
   Next A
   '
   Rem *** Gadget data
18. Data 30,69,280,81
   Data 30,85,280,97
   Data 30,101,280,113
   Data 30,117,280,129
   Data 75,140,92,154
   Data 107,140,124,154
   Data 139,140,156,154
   Data 171,140,196,154
   Data 211,140,236,154
   Data 60,173,250,185
   '
19. _REDRAW[SCRMOD]
20. _REDRAW[CLOURS]
21. QUIT=0 : REDRAW=0
22. Repeat
23.   If Mouse Zone<>0 and Mouse Key=1
24.     GADGET=Mouse Zone
25.     If GADGET<5
26.       If GADGET<>SCRMOD
27.         _REDRAW[SCRMOD]
28.         SCRMOD=GADGET
29.         _REDRAW[SCRMOD]
30.         If SCRMOD>2 and CLOURS=9
             REDRAW=1
           End If
         End If
       End If
31.     If GADGET>4 and GADGET<10 or REDRAW=1
32.       If REDRAW=1
           _REDRAW[CLOURS]
33.         CLOURS=8
           _REDRAW[CLOURS]
           REDRAW=0
         Else
34.         If SCRMOD>2 and GADGET=9
35.           Else
             _REDRAW[CLOURS]
             CLOURS=GADGET
             _REDRAW[CLOURS]
           End If
         End If
       End If
36.     If GADGET=10
         _REDRAW[10]
37.       Wait 5
         _REDRAW[10]
         Wait 60
         QUIT=1
       End If
     End If
38.   Wait Vbl
     Until QUIT=1
     '
39.   Screen Close 0
   End Proc
   '
40. Procedure _REDRAW[A]
41.   Gr Writing 3
42.   Bar GADG(A,0),GADG(A,1) To ☛
GADG(A,2),GADG(A,3)
43.   Gr Writing 1
   End Proc
   '
44. Procedure _OPENSCREEN
45.   CLOURS=2^(CLOURS-4)
46.   If SCRMOD=1
     Screen Open 0,320,256,CLOURS,Lowres
   End If
47.   If SCRMOD=2
     Screen Open
0,320,512,CLOURS,Lowres+Laced
   End If
48.   If SCRMOD=3
     Screen Open 0,640,256,CLOURS,Hires
   End If
49.   If SCRMOD=4
     Screen Open 0,640,512,CLOURS,Hires+Laced
   End If
   Flash Off : Curs Off : Cls 0
   '
   Rem *** Define Colour Palette
50.   For A=0 To 31
51.   Read PALTTE(A)
52.   Colour A,PALTTE(A)
   Next A
53. Data
$0,$ECA,$F00,$A00,$D80,$FF0,$8F0,$80
   Data $B6,$DD,$AF,$7C,$F,$70F,$C0E,$C08
   Data $620,$E52,$A52,$FCA,$333,$444,☛
$555,$666
   Data $777,$888,$999,$AAA,$CCC,$DDD,☛
```

therefore read from data statements and then stored into the **GADG()** array we defined earlier.

16. With the gadget coordinates in place, they are then used to draw a box onto the screen which will show the user where the gadget is.

17. The same coordinates are then used to define the zone, therefore effectively placing a "hot spot" on to the screen.

18. Here's all our gadget definitions in the form of data statements. Each set of four numbers defines a single gadget.

19/20. By default, the screen selector is set to low resolution with 32 colours. We therefore need to show the user that this is the case by highlighting the gadgets **Low Resolution** and **32** gadgets. For this, we call a separate procedure named **_REDRAW** that needs to be passed the number of the gadget to be highlighted. And, as it happens, this information is held within the **SCRMOD** and **CLOURS** variables. Go to step 40 for a detailed description of this procedure.

21. With all the gadgets defined, the program moves on to the task of handling the screen format requester. Two variables need to be defined first though – **QUIT** (a flag variable used to break out of the **Repeat...Until** loop that we shall later define) and **REDRAW** (another flag that is used to tell the program to redraw the colour selection gadgets if the user tries to select a high or medium resolution screen with more than 16 colours).

22. A **Repeat...Until** loop is then started to ensure that the gadgets that we have defined are continuously checked until the user selects the **Let's Get Painting...** gadget.

23. The first thing that the loop does is to check whether the mouse pointer is currently over one of our gadgets and whether the left mouse button has been clicked. If either of these conditions is not true, the rest of the code within the loop is ignored.

24. The index number of the zone that the mouse pointer is over is then written into a variable called **GADGET**.

25. The first half of the gadget checking code works exclusively on the first four gadgets (the screen resolution gadgets), so an **IF...THEN** condition is used to check the **GADGET** variable to see whether the value held within that variable is less than 5.

26. Obviously there's no point in handling a gadget that is already selected, so another **IF...THEN** condition is used to check whether the gadget is already selected.

27. If the gadget hasn't already been selected, then the old gadget is reset by calling the **_REDRAW** procedure before selecting the new gadget.

28. The **SCRMOD** variable is then set to point at the new gadget.

29. The new gadget that has been selected by the user is then highlighted by calling the **_REDRAW** procedure.

30. Now for the clever bit. An Amiga that isn't equipped with the AGA chipset cannot display more than 16 colours in high or medium resolution screen modes, so our screen selector needs to take this into consideration. An **IF...THEN** condition is therefore used to check that the number of colours currently selected isn't any higher than 16 if one of these two screen modes has been selected.

If it is, the **REDRAW** variable is set to 1. This will be picked up by the section of code that handles the colour selection buttons and will force it to set the number of colours to 16.

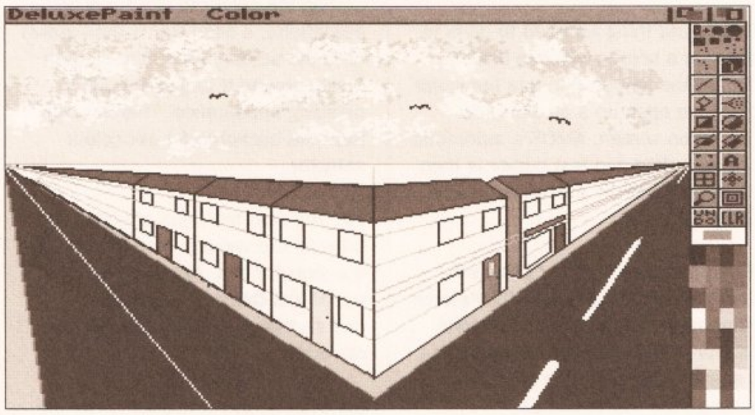
31. Next we move on to the section of code that handles the colour selection gadgets. An **IF...THEN** condition is used to check whether the currently selected gadget is within the range of 5 to 9 or the **REDRAW** flag has been set to 1.

32/33. If the **REDRAW** flag has been set, the **32** gadget is reset, the number of colours is set to 16 and the **16** gadget is then highlighted. This stops the user trying to open a medium or high resolution screen with more than 16 colours.

34. We also need to stop the user from trying to manually set the number of colours to 16 if the screen mode is high or medium resolution. This is done using an **IF...THEN** condition that checks the **SCRMOD** and **GADGET** variables.

35. If the user did try to use 32 colours on a medium or high resolution screen, the gadget selection is simply ignored and the code moves on. Like the screen format gadget selection code, the old colour gadget is reset, and the **CLOURS** variable is set to the new gadget which is then highlighted.

36. Finally, the **Let's Get Painting...** gadget is handled. This gadget is effectively used to quit from the screen format selector. If the gadget has been selected, the **QUIT** flag is set to 1.



Okay, so our paint program won't quite be in the same league as Deluxe Paint, but it could be if you were prepared to add fancy functions to it!

37. In order to make the gadget flash when it is selected, a couple of **Wait** commands are inserted so that the selector doesn't immediately quit.

38. The loop is then closed using the **Until** command which also checks that the **QUIT** variable has not been set. If it has, the loop is terminated.

39. Finally, once the loop has been terminated, we can close the screen format selector by calling the **Screen Close** command.

40. The **_REDRAW** procedure is a very short section of code that handles the redrawing of gadgets. It needs to be passed the index number of the gadget to be redrawn which is stored within the **A** variable. This is a local variable that is only used by the **_REDRAW** procedure.

41. To enable the **_REDRAW** procedure to handle both the highlighting and resetting of a gadget, I've used the **Gr Writing** command to switch the drawing commands to inverse.

Whenever a drawing operation is called, it simply reverses the colour of any pixels underneath the area that it writes.

42. The gadget is then redrawn using the AMOS **Bar** command. This draws a filled rectangle over the specified area.

43. The drawing mode is then reset so that any further drawing operations work in AMOS's default drawing mode.

44. Finally, we come to the **_OPENSCREEN** procedure which opens up a screen in the format specifed by the user. This procedure doesn't need to be passed any values because it works on the **CLOURS** and **SCRMOD** variables that we defined as "global" at the start of our program.

45. At the moment, the **CLOURS** variable simply holds a pointer to the colour gadget that the user selected. In order to turn it into the actual number of colours required, 4 is subtracted from it and the number 2 is raised to the power of the result.

46. Now we can open up the screen which will be used as our electronic canvas. If the **SCRMOD** variable holds a value of 1, a low resolution screen is opened using the number of colours held within the **CLOURS** variable.

47. If **SCRMOD** holds a value of 2, an interlaced low resolution screen is opened.

48. If **SCRMOD** holds a value of 3, a medium resolution screen is opened.

49. For a value of 4, a high resolution interlaced screen is opened.

50. Finally, we need to set up the colour palette of the screen. Although all 32 colours are defined regardless of the number of colours used by the screen that was opened above, only those applicable to the screen are used. For this purpose, a **FOR...NEXT** loop is used.

51. The colour settings (expressed as hexadecimal values) are then read from data statements.

52. As each colour setting is read, the palette is initialised by writing these values to the colour registers using the **Colour** command.

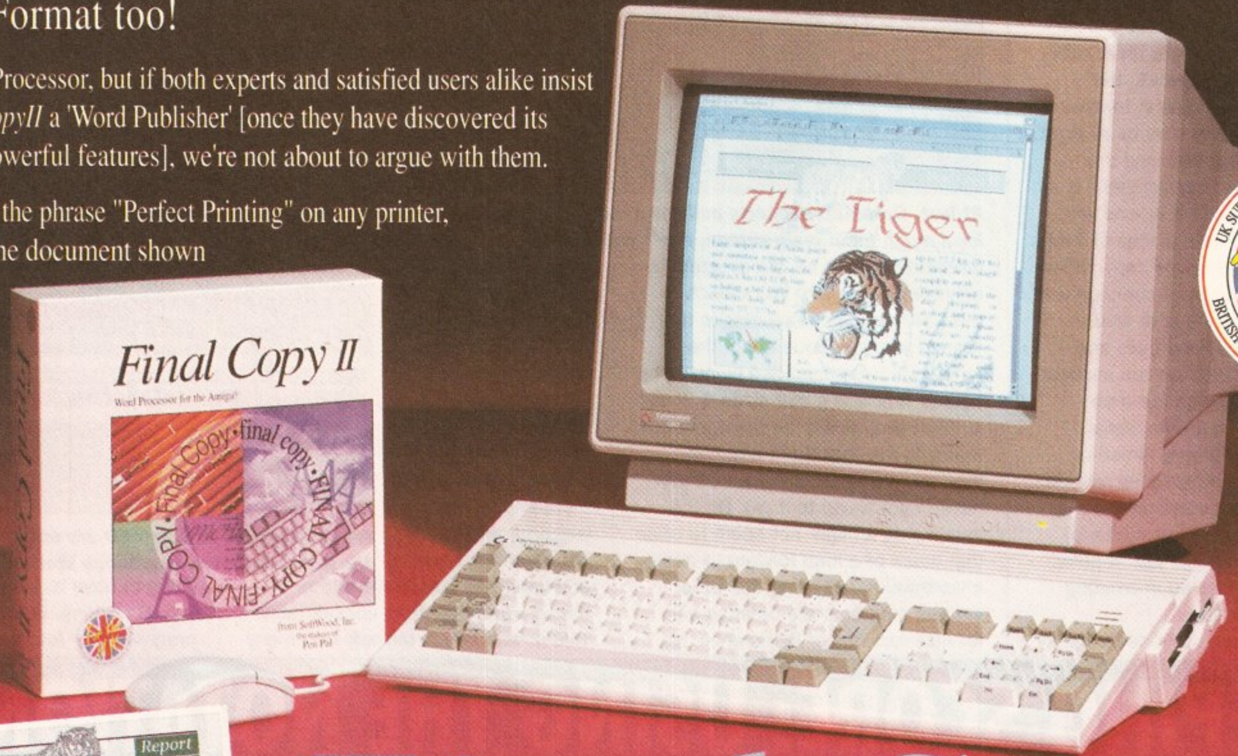
53. Here's all the palette definitions held within the program with **Data** statements. To be perfectly honest, I pinched these colour settings from *DPaint*, so you will get the same default palette. I don't think Electronic Arts will mind! AS

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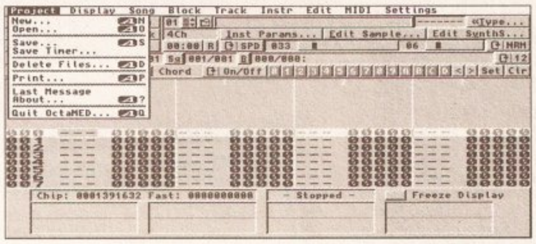
OctaMED fine-tuned

Just as you're getting used to one version of OctaMED, a shiny new improved version pops up to entice you. Tim Tucker tests the latest in a popular series.

Teijo Kinnunen has been at it again in his quest for the perfect version of *OctaMED*. This time, with *OctaMED Professional* v5, the changes are more radical than ever before, and his goal may be in sight.

If you've been following this series, you know that *OctaMED* is a tracker program – that is, one with which you can create pieces of music using the internal sound capabilities of the Amiga. The most common way of using the program is to load in standard Amiga IFF samples and sequence them into various musical building blocks, which are then strung together to create songs. Trackers were originally aimed at programmers, because they provide a perfect way to incorporate sound tracks into programming routines, but they have become very popular with anyone interested in creating music on the Amiga.

So what makes this new version

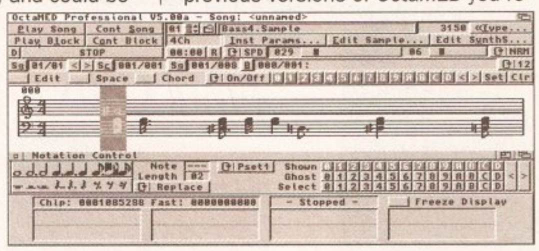


At last, OctaMED supports pull-down menus. It makes for a much tidier main screen, don't you think?

different? First of all, the program is only compatible with Workbench 2.04 or later. The reasoning is that anyone who's serious about the Amiga will have upgraded by now (it's been a year and a half since 1.3 was superseded). It's a fair point, but I'm willing to bet that there are more than a few users out there who just haven't got round to it yet. On the music side it might not seem to offer that much of a leap forward to make it worthwhile upgrading, but other serious programs are catering only for new versions of Workbench, so the writing's on the wall.

When you boot up the program the most obvious difference, apart from the general overall re-design, is that whereas in previous versions the commands were all available on-screen, and could be found in various panels brought up by clicking on buttons, now many of the controls are accessed via menus. Almost all Amiga programs work using menus, so it's a welcome addition to the control system, and serves to lessen the clutter of the on-screen controls considerably. Tied in with this is the way that many of the menu commands and other features bring up further windows, which can be reduced to the size of the menu bar and tucked away for convenience until required. This has obviously been well thought out, because it makes for a much tidier working process, and also makes it a lot easier to flick between different modes of operation.

So, even if you're familiar with previous versions of *OctaMED* you're



All the features of OctaMED are still there, including the notation editor, in glorious Workbench 2-a-vision.

going to have to get used to a new way of working. But does the program offer features worthy of the

KEEPING SCORE: USING THE NOTATION

Started making your own music with *OctaMED?* Here's some conventions to make using the program easier.

There is no facility for naming tracks, so it's a good idea to standardise which instruments are assigned to which tracks from the start. Knowing where certain parts are to be found makes it a lot easier to negotiate your way around a song – and a lot faster if you load up a song you created a month ago. It's also handy when you want to mute a particular instrument – if you want to hear the music without the drums, say, it's easier if all the drum tracks are together and in a familiar place.

So, as a general rule, record the drums and percussion to the lower tracks, the bass next, then chordal instruments such as the piano, organ or guitar. Always put the melody at the top of the arrangement. This is how you'll see instruments laid out in musical scores and arrangements. Here's how an eight-track *OctaMED* song might be organised:

Track 0 – Bass drum
Track 1 – Snare drum
Track 2 – Hi-Hat
Track 3 – Bass
Track 4 – Piano chord note 1
Track 5 – Piano chord note 2
Track 6 – Piano chord note 3
Track 7 – Melody

Of course, you don't have to actually record the instruments in this order. It might be that the first things you come up with are the Piano chords, which you'd record on Tracks 0 to 2. However, you can easily cut and paste between the different tracks

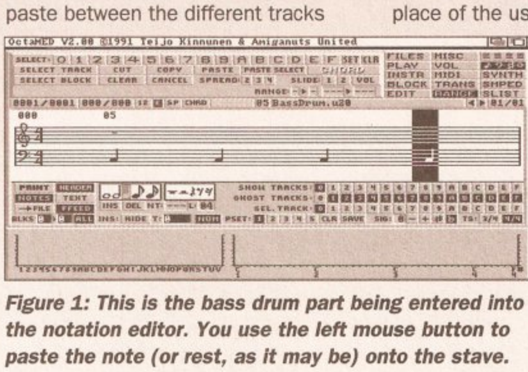


Figure 1: This is the bass drum part being entered into the notation editor. You use the left mouse button to paste the note (or rest, as it may be) onto the stave.

when it comes to adding other parts, or leave re-organising the tracks into standard assignments till the end of the recording session.

These standards are essential when it comes to working with the Notation Editor. Unless you've got a clear idea of which instruments are on which tracks, the musical stave is very difficult to make sense of. Let's take a look at it now.

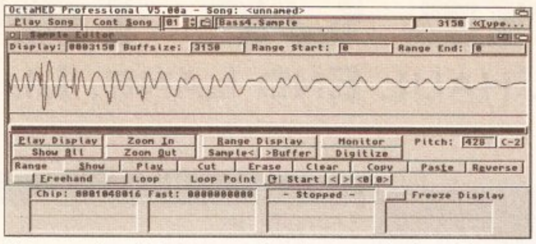
MAKING NOTES

Click on the second gadget down in the far right column of gadgets in the top panel (the one marked with various musical symbols), and the Notation Editor will be displayed in place of the usual Block Editor. If you're unfamiliar with standard musical notation, don't be put off. It's very easy to grasp in principle, and some of the features in *OctaMED's* Notation Editor actually make it easier to learn.

First of all let's enter some notes. Make sure Editing is turned on (highlight the small **E** in the status panel), then choose a Bass Drum sample from the sample list. Before you enter notes on the stave you first have to determine the length of the note you require. To do this, pick one of the symbols in the box under the stave. To enter a steady bass drum rhythm we're going to require a crotchet, or "quarter-note" as the Americans call it. This is the symbol which looks like this: ♩. Click on this symbol to select it. You'll notice that the number 04 appears in the box marked **L:** below the symbols box. This indicates the number of lines in the normal Block Editor which the note value chosen will take up. In this case, then, one crotchet equals four lines, so entering this part will be the same as entering the part with a Space value of four in the Block Editor.

Now choose a track to enter the notes into, using the **Select Track** row of gadgets under the stave – choose 0 here. A black cursor appears on the stave, which is equivalent to the cursor in the Block Editor. Click on the second space up in the stave (within the cursor) with the left mouse button, and your first note will be entered. The cursor automatically moves on a crotchet, so all you have to do to enter the bass drum part is to click in the cursor position every time it moves. Figure 1 shows how it should look.

Now let's add a snare part. Choose a snare drum sample, then select Track 1 using the **Sel Track**



The sample editing screen has been re-designed, too, which makes editing sample waveforms easier.

effort? Let's have a look at some of the more significant improvements. The handling of the tracks has been hugely improved. The maximum number is now 64 tracks (previously only 16 were available), and you're no longer restricted to working with multiples of four all the time. Although you can still only play eight at a time, this expanded capability makes it easier to organise your tracks, and enables you to add plenty of variation if required.

One of the more prominent new features is the incorporation of Sections. These are a further step up in the hierarchy of song construction, in that they enable you to string Play Sequence lists together in any order you like. Thus the Section takes the role of overall song construction, and the Play Sequence lists become sub-sequences within them. This offers even more flexibility than the previous system, although it's questionable how often you'd use the expanded nesting capabilities. It all depends on just how complex your material is likely to be.

There are various other improvements, too numerous to outline here, but it's worth mentioning some of them briefly. For example, there's the Save timer, which brings up a Save window at specified intervals; the Play after Load facility, which enables you to hear a song as soon as it's loaded; the ability to set default pitches for instruments, which is very handy for drums and percussion. With such handy changes as these, this is certainly a worthwhile release, and highlights admirably the ceaseless devotion on the part of the programmers to give you everything you could possibly want from a tracker. Everyone who's used *OctaMED* in the past will certainly want to upgrade to this version, and anyone looking for a first tracker could not find a better place to start. Highly recommended. AS

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Documentation ●●●○○
Readable manual, and useful read-me files on disk too. Also supports on-line help using the **amigaguide.library**.

Ease of Use ●●●●○
Newcomers to tracking will still be confused at first, but the menus and windows are a huge improvement on previous versions.

Value for Money ●●●●○
Can't be beaten for what it offers at the price. A real bargain.

Overall rating ●●●●○
A worthwhile investment for anyone who's interested in making music on the Amiga. At this price it won't break the bank either.

SPECIAL OFFER

OctaMED v2 was yours as part of the *Amiga Shopper Shareware Collection volume 4* with *Amiga Shopper* 27. As a special offer from RBF Software, publishers of *OctaMED*, you can save £6 off the full release price of the new *OctaMED Pro* v5. Just send your *original AS* 27 cover disk directly to RBF and they'll copy v5 onto it for just £24.

Conditions: the disk sent in *must* be the original *Amiga Shopper* 27 cover disk – copies will not be accepted (but there's nothing to stop you *keeping* a copy so you still have all the other goodies on the disk, right?). You must enclose a stamped, self-addressed jiffy bag (large enough to return the disk in), as well as a cheque or money order for £24 made payable to S Burt-Frost. This offer is open only to UK residents and closes on 24 December 1993.

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Note: RBF cannot supply further copies of *OctaMED* v5 – contact the distributors, Seasoft.

EDITOR IN OCTAMED 2

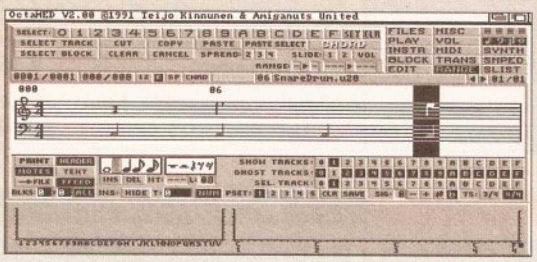


Figure 2: The top space of the stave contains the snare drum part. The second note ties over the bar line, but it's actually the same length as the first.

gadgets. Notice that Track 0 is "ghosted" or greyed out. This enables you to see something you've already entered, but still differentiate it from what you're currently working on. This time we want the snare part to be separated by a gap twice as long as that of the bass drum, so you need to choose the minim, or half note, which looks like this – 𝅗𝅥. Now move the cursor, using the arrow keys on the keyboard, so it's at the same place on the stave as the second bass drum note entered. Enter the snare drum part by clicking in the top space of the stave, within the cursor, until the end of the track. Figure 2 shows how this looks.

If you want to see both tracks clearly, click on **0** and **1** in the **Show Tracks** row of gadgets. Turning them off (by clicking on them again) doesn't actually turn the tracks off, it just takes them off the stave display. You can choose any combination of tracks to either ghost or show, as well as selecting a different track to enter notes into. This is where the organisation of tracks is essential. If all your drum parts take up the lowest tracks, it's easier to determine which tracks to turn off if you don't want to view them.

You can set up five different configurations of track displays in the Notation Editor by using the pre-set buttons. These are the gadgets marked **1** to **5** labelled **PSET.** You can set any arrangement of shown or ghosted tracks as a pre-set by simply clicking on a pre-set button and arranging the **Show Tracks, Ghost Tracks** and **Select Track** buttons as you wish. The pre-sets will be saved with the rest of the song if the **SAVE** gadget at the end of the **PSET** row is highlighted. Thus, by turning off the lower tracks in a pre-set, you could easily see the song without the drum parts, for example, at the click of a button. This is very handy – the stave can look extremely cluttered when a few tracks have been entered. To clear the settings of the current pre-set, click on the **PSET: CLR** button.

Various gadgets make the notation display easier to read. The **NUM** button (to the left of the **PSET** buttons) displays the sample number above the stave whenever you select a track. Also, you may notice a lot of *accidentals* in the music. These are the sharp (♯) and flat (♭) signs before the notes. It is standard musical practice to place accidentals at the beginning of the music to make up the Key Signature, which determines the key of the piece. The set of buttons to the right of the **PSET** buttons, marked **SIG,** enable you to stipulate the key signature by highlighting either sharps or flats, and using the + and – buttons. If you don't know a lot of music theory, just click on the symbol that appears most often throughout the music (♯ or ♭), then click on the + button until they all disappear from the stave. There are also two time signature buttons, 3/4 and 4/4, to determine the number of crotchets in a bar.

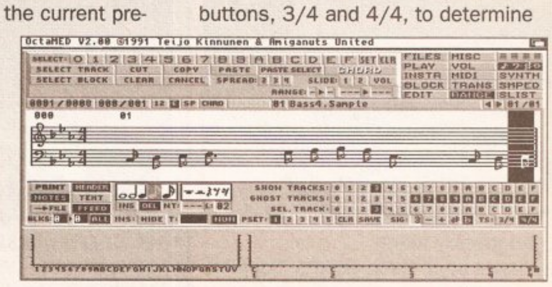


Figure 3: This piece of music is in the key of E♭, which uses three flats as a key signature. The resulting display is much less cluttered and easier to read.

The notation editor is handy if you're used to traditional notation, or even if you just prefer seeing music displayed graphically rather than numerically as in the block display. You can even print out the results for other musicians to play. Check the disk documentation for full details.

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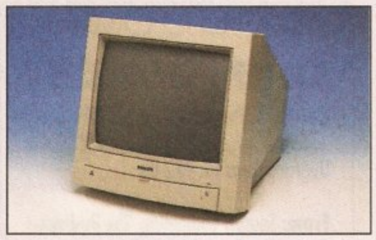
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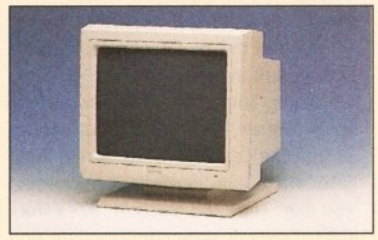


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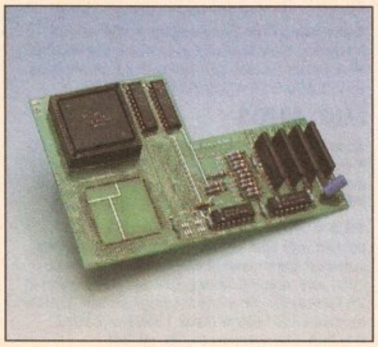
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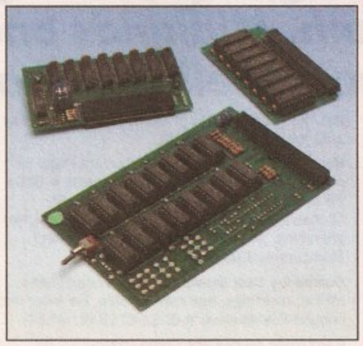
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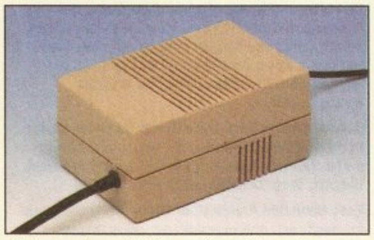
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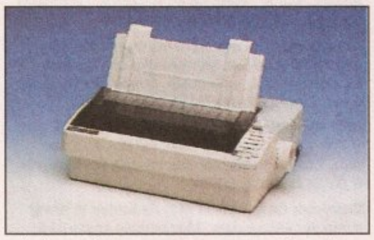
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(80 column, 50 nozzle print, 360 CPS draft, 120 LQ, HP emulation 8KB buffer, 3 fonts, vertual lazer quality)

Chips and Spares



- WTS have sole distribution rights from Americas biggest Commodore chip distributor

- Workbench 2.04 Kit **£78**
(Includes manuals, disks & chip)
- Kickstart 2.04 **£24**
- Kickstart 1.3 **£26**
- Kickstart ROM Swapper **£18**
(Swap between kickstarts)
- Fatter Agnus 8372 **£49**
- Obese Agnus 8375 **£54**
- High Res Denise **£29**
- 1MB x 9 Simms (3 chip) **£29**
- 1MB x 4 Zips **£14**
- 8520 CIA **£13**

SALES HOTLINE 0582 491949 (6 LINES), 0480 471117 (24HR), FAX ON 0582 505900

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WARRANTY: One year return to base (excluding chips).
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WHERE TO FIND US!

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Bedford
0234 218228

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No.6
Priory Mall Shopping Centre
St. Neots
0480 471117

Computer Mall Hertford
49 Railway St.
Hertford
0992 503606

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84 High Street North
Dunstable
Bedfordshire
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All prices quoted or products stocked are subject to stocking levels and availability. WTS cannot be held liable or supply reimbursement for force majeure, or items, which are out of stock due to demand or low stock at its suppliers which may result in delayed delivery or non delivery, payment with order, please allow 28 days for delivery. WTS reserve the right to ammend prices, revise packs, specifications and or substitute product wihtout prior notice at any time without liability upon itself. E & OE

Find your local group

There's sure to be a group of Amiga users near you! This issue: the South, Midlands and special interest groups, plus Poland. Well, it's local if you live there.

SOUTHEAST AND EAST

1–1 Amiga Club Postal software, ideas etc. SAE plus blank disk for details. Contact Peter Duckett, 11 Avon Close, Addlestone, Surrey KT15 1JO ☎ 0932 855834 after 8pm. Membership free. (AS34)

AmigaBASIC club Free bi-monthly disk, help for beginners and experts. Membership £10/year. Contact: Conran Ahmad, 15 Weybridge Rd, Thornton Heath, Surrey CR7 7LN ☎ 081 689 9102. (AS34)

Amiga Club Newsletter, disks, PD etc. £10 membership. Send SAE for details to Imp, 190 Fallowden Way, Hampstead Garden Suburb, London NW11 6SE ☎ 081 455 1626. (AS34)

Amigaholics Club Disk magazine covers PD, programming, music, art, DTP, and more. Free membership. Contact Kevin Bryan, 49 Coutts House, Charlton, London SE7 7AS ☎ 071-580 2000 Ext 240. (AS34)

Amiga Mania Bi-monthly publication (28+ pages). Public domain, licenseware, bargains, classifieds, free advice, free gifts, free disks. Annual membership £12. Contact D Cryer, 88 Blackbull Rd, Folkestone, Kent CT19 5QX. (AS34)

AmigaSoc PD, tips, cheats, MIDI, programming, disk magazine, all welcome. Free membership. Contact Neil Cartwright, 17 St Winefrides Ave, Manor Park, London E12 6HQ ☎ 018 553 5434. (AS34)

Amiga Users Group – Luton Help, advice, swapping PD, exchange and discounts on software and hardware, monthly newsletter. Membership £5 per year. Contact Dave ☎ 0582 502806. (AS34)

Amiga Witham Users Group 85 Highfields Rd, Witham, Essex CM8 1LW. Tips and BASIC programs. K Anderson ☎ 0376 518271. (AS34)

Amiga Zone Bi-monthly publication with reviews, PD, AMOS, Workbench, news, coverdisk. £2 inc P&P, or £1.45 without disk. Contact Gareth and Raymond, 7 Swindon Road, Horsham, W. Sussex RH12 2HE. (AS34)

APDEG (Amiga Public Domain Exchange Group) Laser printing service, free PD, advice service, util disks for members, PD swaps. Contact Richard Brown, APDEG, 18 High Street, Mundesley, Norfolk NR11 8AE ☎ 0263 720868. Membership fee £6 a year. (AS34)

Beaconsfield and District CC Contact Philip Lishman 27 Russell Court, Chesham, Bucks ☎ 0494 782298. Meetings at St Michaels Hall, St Michaels Green, Beaconsfield 7.45–9.45pm. Programming, gaming swapping PD, having fun. Membership £10 for 6 months. (AS34)

Camberley User Group Lectures, competitions, advice, meetings, free membership. For more info contact F Wellbelove ☎ 0252 871545. (AS34)

Cambridge Sixty-Eight Group (CASE) SuperBasic, QDos, QL Emulator and QL software support on Amigas (serious users only). Meets 7.30pm, second Monday of each month, at Robinson Hall, Lolworth, Cambridge. Contact EPL Rowell, 347 St Neots Road, Hardwick, Cambridge CB3 7QL ☎ 0954 210692. (AS34)

Cheapo PD Club Non-profit-making postal PD, newsletters, advice. Membership £5. Contact Jason Meachen, Ivy Cottage, Chapel Road, Beaumont, Clacton, Essex CO16 0AR. (AS34)

Chic Computer Club Full details with an SAE to STAMP, Chic Computer Club, PO Box 121, Gerrards Cross, Bucks. For info contact Steve Winter ☎ 0753 884473. (AS34)

Computer Club A 16-bit club dedicated to being computer enthusiasts. Membership costs £15 per year. Contact 16 Laton Rd, Hastings, East Sussex ☎ 0424 421480. (AS34)

Enfield Amiga club Meet, swap, competitions, help for new users. For info contact Sean Clifton 32a Hoe Lane, Enfield, Middx ☎ 081 8042867 (AS34)

Hanover Computer Club DTP, PD, games, help, monthly meetings, beginners welcome. Free membership. Contact Colin Jones, Hanover Community Centre, 33 Southover Street, Brighton, Sussex ☎ 0273 602834. (AS34)

Hermit Computer Club Hardware help and information, program swapping. Meetings 7-10pm, Mondays. Membership £3 per term, 50p per night. Contact John Maynard, Hermit Centre, Shenfield Road, Brentwood, Essex CM15 8AG ☎ 0277 218897. (AS34)

Kent Youth Computer Group Computer fair visits, video and DTP work, monthly newsletter. Membership 40p per month. Meetings at the North Youth Centre, Thursdays 7–10pm. Contact Jim Fanning North Youth Centre, Essella Rd, Ashford, Kent ☎ 0233 629804. (AS34)

Magic Windows Hardware projects, programming, PD, help and advice on all topics, beginners welcome. For more info send SAE to Frame, 26 St Benets Road, Stalham, Norwich, Norfolk NR12 9DN. (AS34)

Not the Night requires new members, coders in Assembler or C, GFX artists and musicians in any format (MED, PC/ST/NT etc). Beginners welcome. SAE for form to Andrew, 8 Lanark Road, Ipswich, Suffolk IP4 3EH. Membership £1.50 a year (goes back into the group). (AS34)

Robotronix Amiga Club Bi-monthly newsletter, tips, cheats, programming support, advice. Send SAE for details. Contact P Symonds, 36 Century Road, Cobholm, Gt Yarmouth, Norfolk NR31 0BX ☎ 0493 667161, Membership £15 a year. (AS34)

Rye Amiga Group Regular newsletter, swap/meet at the Rye Community Centre. Contact Oliver Campion, 71 The Mint, Rye, E Sussex TN31 7EW ☎ 0797 222876. (AS34)

Sensible magazine: reviews, tips, news, loads more. 50p or 20p + SAE. Contact M Street, 158 Hadleigh Road, Leigh-on-Sea, Essex SS9 2LP. (AS34)

Sittingbourne Co-op Computer Club Programming, PD, games, free write-in advice service. £10/year, £5 unwaged. Meetings Mondays 6–9pm at Mall beneath Regis Suite. Contact Andy, Unit 11, The Mall, 121–127 East Street, Sittingbourne, Kent ME10 4AQ ☎ 0795 842608. (AS34)

Slim Agnus PD library, BBS, advice from Amiga experts. Group meets the last Thursday of every month. Contact Philip Worrel, 115 Brocks Drive, North Cheam, Sutton, Surrey SM3 9UW. (AS34)

South 16 Amiga/ST User Group Bi-monthly disk based mag, discounts available from local stores, free advice and extensive PD library. £12/year. For more info send SAE to PO Box 16, Southampton, SO9 7AU. (AS34)

Southend Team Music, PD. Free membership. Contact Scotty, 52 Prince Avenue, Southend-on-Sea, Essex SS2 6NN ☎ 0702 333974. (AS34)

Twilight Advice on hardware and software, Fred Fish PD. Free membership, disks 50p each. Contact 13 Mavis Court, Ravens Close, London NW9 5BH. (AS34)

GETTING YOURSELF LISTED – AN IMPORTANT NOTE

Your user group will be listed here free of charge for six months, then deleted to prevent defunct groups being listed indefinitely. The number at the end of each entry is the last issue in which that entry will be included. If you want your group's entry left in, just send in this coupon again a couple of issues in advance. PD libraries are now listed at the end of the PD section – this issue, page 104.

If you run a user group which isn't listed on this page, fill in the form below for your free entry. Send it to *Amiga Shopper* User Groups List, 30 Monmouth Street, Bath BA1 2BW. We reserve the right to refuse entries.

AS29

Group name ....

Type of activities ....

....

Place of meetings ....

Time of meetings ....

Contact name ....

Contact telephone number ....

Contact address ....

....

....

Membership fee ....

SOUTHWEST

Amiga Users Klub Meets every Friday from 6.30-9pm, to expand members' knowledge of Amiga and to help solve people's problems. Contact Jack Talling, Windsor House, 19 Castle St, Bodmin, Cornwall PL31 2DX. (AS34)

Ami-Info Interested in the serious side of the Amiga? Then send an SAE for details to Paul Caparn, Homeside, Higher Warberry Road, Torquay, Devon TQ1 1SF. (AS34)

Avon Micro Computer Serious Club The first Sunday night of each month 1900-2200, members 50p guests £1. Centre For The Deaf, 16-18 King Square, Bristol BS2 8JL Fax: 0272 311642. (AS34)

Bournemouth Amiga Club Problems, fun, social beginners welcome. Free. Contact P Chamberlain, 36 Homeoaks, 30 Wimborne Road, Bournemouth, Dorset BH2 6QA ☎ 0202 296714. (AS34)

Bristol Amiga Club Disk-based monthly magazine: PD, reviews, news, help service, utilities, games, disk finder service, music specialists. 3 Parkstone Avenue, Horfield, Bristol BS7 0BX. Membership £10 a year. (AS34)

CHUD Free membership. Send SAE for details to Mr M Sellars, 103 Newward Rd, Bulford, Salisbury, Wilts SP4 9AH ☎ 0980 33154. (AS34)

EmuSoft PD, Utils, starting up help and advice to all users and programmers. Contact Nalpex, 48 Longhandstones, Cadbury Heath, Bristol BS15 5AP. Membership free. (AS34)

Exeter 16-bit User Group Programming. Andrew Deeley or Phil Treby at 25A Gloucestershire Rd, Exwick, Exeter, EX4 2EF. Meeting every Wednesday 7pm. Membership £6 per annum. (AS34)

Game Swap Club Swap original software and hardware. Membership £3. Contact Ade Ajidahun, St Andrews House, 125 North Road, St Andrews, Bristol BS6 5AH ☎ 0272 240399 (AS34)

MIDLANDS

Aden PD Advice and AMOS for beginners, cheats. Free membership. SAE plus disk to Den Rounding, 8 Primrose Lane, Miami Beach, Trusthorpe Road, Sutton-on-Sea, Lincs LN12 2JZ. (AS34)

BR & CJ Computer Club Regular disk mag packed with tips, reviews of games and serious software, game cheats database, demos and utils, very large PD library. Contact B Robinson at 23 Fairway Rd, Shepshed, Loughborough, Leicestershire LE12 9DS ☎ 0392 72889 or 03922 841296. Membership £1.25. (AS34)

Cacophony (Unlimited) Aims to create quality PD with AMOS and others. Help given. Mark Wickson, 49 Perrott Close, North Leigh, Witney, Oxon OX8 6RU. (AS34)

Coventry and Warks Commodore Computer Club Self-help, PD library, guest speakers, newsletter. Meets Christ the King Community Centre, West Hill Road, Coventry. Contact Will Light, 22 Ivybridge Road, Coventry, West Mid ☎ 0203 413511. (AS34)

Deluxe Cheats Disk User Group Software advice. Updates every 2 months! £4 for disk, £2 for updates. Contact Steven Frew, 96 Campden Green, Solihull, West Midlands B92 8HG. (AS34)

East Midlands Amiga User Group Self-help group for beginners and experienced users. Meets Willoughby Social Club, 7–10pm every Wednesday evening. Contact Richard Haythorn, 70 Felstead Road, Aspley Estate, Nottingham ☎ 0602 298075. Membership £5 a year. (AS34)

Hereford Amiga Group Help, exchange of PD and shareware. Membership free. Contact John Macdonald, Alma Cottage, Allensmore, Hereford HR2 9AT ☎ 0981 21414. (AS34)

Melton Amiga Users PD, serious, advice. No pirates. Beginners and experts welcome. Contact Stephen Mowbray, 68 Ferneley Crescent, Melton Mowbray, Leics LE13 1RZ ☎ 0664 63421 (evenings only). (AS34)

Shropshire Amiga Link Advice, monthly disk mag, PD. Free membership. Contact N Cockayne, 2 Dodmoor Grange, Randlay, Telford, Shropshire TF3 2AW ☎ 0952 591376. (AS34)

Sid The Kid Amiga Information on the Amiga 500, Plus, 1200. Free membership. Contact Sid Reeves, 75 Blossomfield Road, Solihull B91 1SA ☎ 021 705 8619. (AS34)

Software Exchange Service 13 Bournville Lane, Stirchley, Birmingham, West Midlands B30 2JY. For more info ☎ Michael Pun 021 459 7576. (AS34)

SPECIAL INTERESTS, BBSs

1520 Plotter Group (ICPUG) John Bentley ☎ 06286 65932. (AS34)

24-bit Club For users of Video Toaster, OpalVision, DCTV and AGA machines, Imagine 2, Lightwave and other 3D modelling software. Contact Gordon Keenan, 24-bit Club, 6 Skirsa Square, Floor 1, Glasgow G23. Send stamp for details. Membership £20 a year. (AS34)

Action Replay Users Club For help, tips, lists of pokes. Free. For more details contact Gordon Hagan, 66 Muirside Avenue, Kirkintilloch, Glasgow G66 3PR. (AS34)

Amiga Boatowners All things nautical, WHY exchange, nautical aid programs etc. Free membership, send SAE to D Beet for details. Lock, Branston Fen, Lincolnshire LN3 5UN. (AS34)

Amiga E Support Group Supports all aspects of programming for this excellent new language. Contact John Findlay, 52 Church Road, Braunston, Nr Daventry, Northants. NN11 7HQ, ☎ 0788 891197. Membership free; SAE for details.

Amiga Musicians Club Membership gets you a disk with 50 IFF samples a month for 12 months. Also sample service. Membership £30. Contact Gavin Wylie, Guthrie Street, Carnoustie, Angus. (AS34)

Amiga Video Producers' Group Disk magazine five times a year; meets quarterly in Swindon. Object library for mainstream Amiga 3D programs (Imagine, Sculpt, VideoScape, etc). For info SAE to J Strutton, 8 Rochford Cl, Grange Park, Swin-

don, Wilts SN5 6AB ☎ 0793 870667 before 9pm. Membership fee £10 a year. (AS34)

AMOS Programmer Club Free membership, swap AMOS programs and PD, disk magazine and help for new users. Contact Gareth Downes-Powell, 6 Brassey Avenue, Broadstairs, Kent CT10 2DS. (AS34)

AMOS Programmers Exchange Free membership. Swapping software and ideas. Help available. J Lanng, 7 Majestic Rd, Hatch Warren, Basingstoke, Hants RG22 4XD. (AS34)

AMOS Programmers Group John Mullen at 62 Lonssdale St, Workington, Cumbria CA14 2YD. Hints, tips, tutorials too. SAE for info. £10 membership for bi-monthly disk mag. (AS34)

Atlantic Wave BBS 100s of files for download. DTP, clip art, graphics, utilities. First 200 members get unlimited downloads for life. Free membership. Message areas ranging from sport to cookery. All Amiga BBS. Call 0462 481745 (300 – 2400 baud 8N1) 24 hours a day. (AS34)

BASIC Programmers' Group 68 Queen Elizabeth Dr, Normanton, West Yorks WF6 1JF. Encourages the use of BASIC, exchanges ideas and assists beginners to the language. Free newsletter Mark Blackall ☎ 0924 892106. (AS34)

Bible Bureau Online scripture output and informal bible study. Quarterly meetings, membership £5 quarterly. Contact AD, 24 Brodie House, 10 Harcourt Avenue, Wallington, Surrey SM6 8AR ☎ 081 669 7485. (AS34)

Bright Lights BBS Amiga-only BBS, 300 – 14,400 BAUD, 350+ files on-line. On-line 7pm–7am every day. Sysop: Alan Clarke. ☎ 021 325 1723 (modem). (AS34)

The CDTV Revolution Discussing and updating the ever-changing CD scene. Contact Lee Beckett, 4 Albert Road, Grappenhall, Warrington, Cheshire WA4 2PG, ☎ 0925 268819. Membership £5 a year. (AS34)

CDTV User Group Newsletter, reviews, advice, helpline, CD swaps. Membership fee £4.99. Contact Gary Ogden, 50 Averill Road, Highfields, Stafford ST17 9XX ☎ 0785 227059. (AS34)

CDTV Users Club Technical support, news, compiling compatible software list. Free membership – just send SAE. Contact Julian Lavanini, 113 Fouracres Rd, Newall Green, Manchester M23 8ES. (AS34)

Gamer-Link International pen-pal club for gamers. Free swap service, advice on tips and cheats. Life membership £5. Contact Stu, 28 Churchfield, Ware, Herts SG12 0EP. (AS34)

GFA Basic Forum Free advice on programming in GFA. Also tutorial disk for sale. Beginners and advanced users welcome. Contact J Findlay ☎ 0788 891197 or send SAE to 52 Church Rd, Braunston, Nr Daventry Northants NN11 7HQ. Free membership. (AS34)

Highlander BBS Lots of files, two CD-ROMs about to go on-line. Free membership. Contact Alan Walker, Mark Price ☎ 0452 384702 & 0452 384557, 300–14,400 speeds, 24 hours. (AS34)

Impulse BBS Comms, files, games and chat. Contact James Norris ☎ 081 698 8978, online 10pm till 6pm the next day. 14.4 HST. (AS34)

In Touch Amiga Penpals, contacts, PD, swaps £2.50 per year. For more information contact P Allen, 0342 835530, PO Box 21, Lingfield, Surrey RH7 6YJ. (AS34)

Look Northwest BBS 1,000Mb of on-line storage and CD-ROM, on-line games and much more. Speeds up to 14400. ☎ 0282 698380 or 0282 619518. Membership free. (AS34)

Marksman (Trojan Phazer user group) Promotes use of the Trojan Phazer, swaps PD and own programs, disk magazine. Contact David Green, 67 Thicket Drive, Maltby, Rotherham, S Yorkshire S66 7LB. (AS34)

Micro Academy Art, design and art-based games on Amigas. Meet in Richmond area. Contact Don Pavey, 30 Wayside, Sheen, London SW14 7LN, ☎ 081 878 1075. Membership free, except for cost of colour printing and materials used.(AS34)

MUG – MED Users Group Club for users of OctaMED. Disk magazine, advice, news, competitions. Contact Richard Bannister, 6 Glevum Road, Stratton St Margaret, Swindon, Wilts SN3 4AF. Membership free, send SAE for details. (AS34)

Nothing But AMOS Help with AMOS, tutorials, monthly disk mag – £7 for 6 issues. Contact Neil Wright, 3A Riding Dene, Mickley Square, Stocksfield, Northumberland NE43 7DL. (AS34)

Pascal Programmers Group Disk-based newsletter for HighSpeed Pascal users. Free membership. Contact Colin Yarnall, 93 Manchester Rd, Wilmslow, Cheshire SK9 2JQ. (AS34)

Phoenix Demo Coders, musicians, artists and designers making the best demos. Free membership. Contact Frank, 46 Hall Road, Chadwell Heath, Romford, Essex, RM6 4LJ ☎ 081 597 4661. (AS34)

Ray Tracers Postal club to swap ideas, objects, pictures etc for all formats. Also disk mag and help. Membership 50p. Contact Neil Hallam, 12 Meesons Mead, Rochford, Essex SS4 1RN. (AS34)

System One BBS 1000s of filers on-line, supporting all areas of files and message bases, including Fidonet. Open 24 hours a day, 7 days a week. All speeds up to 16.800K HST and 14.400K V.32BIS. ☎ 0743 791501.

UK Subs The Hanger BBS, trading post for PD files, swapping. Free membership. Contact Diddy or Arklight ☎ 0525 875518. (AS34)

Unique Styles Postal club for Amiga artists, programmers, musicians. Free membership. Contact Derek at 15 Montgomery Rd, Highbrooms, Tunbridge Wells, Kent ☎ 0892 518319. (AS34)

Video Visuals Exclusively for video producers, PD library, genlocking, digitising, quarterly disk magazine. Membership £10 per year. Contact Chris Brown, 4 Lavender Close, Witham, Essex CM8 2YG. (AS34)

Independent Commodore Products Users Group Free PD software, 100 page journal, technical helplines and discounts. Contact the Membership Secretary, PO Box 1309, London N3 2UT ☎ 081 346 0050 after 6pm, or your local branch: (AS34)
Chelmsford ☎ David Elliott 0245 460189
Coventry ☎ Will Light 0203 413511
Dublin ☎ Geoffrey Reeves 010 353 1 288 3863
Exeter ☎ John Buckle 0392 214760
Macclesfield ☎ Peter Richardson 0298 23644
Mid Thames ☎ Mike Hatt 0753 645728 (8–10pm)
Solent ☎ Anthony Dimmer 0705 254969
South East ☎ John Bickerstaff 081-651 5436
South Wales ☎ Ian Kelly 0222 513815
South West ☎ Peter Miles 0297 60339
Stevenage ☎ Brian Grainger 0438 727925
Stoke-on-Trent ☎ David Rose 0782 815589 (eve)
Watford ☎ Bob Rigby 0923 264510
West Riding ☎ Kevin Morton 0532 537318
Wigan ☎ Brian Caswell 0942 213402

The Amiga in Poland

In a special report, Jacek Artymiak reveals what life is like for Amiga users in Poland.

Life is difficult in Poland. The lack of money is a big problem and severely limits access to new technology. Surprisingly though there are an estimated 80,000 Amiga users in Poland. This makes them the second largest group of computer fans there.

Commodore have been quick to recognise the potential of the Polish market and opened an office in Warsaw, which is still open despite the cutbacks Commodore are making elsewhere in Europe. The firm advertises the whole range of its products in the main computer magazines, including the Polish edition of *Amiga Magazine,* which sells almost 40,000 copies each month. Other titles dedicated to the Amiga include *C&A* and *Amigowiec,* which is published entirely on Amigas using *Professional Page.*

All these magazines run their own public domain and shareware libraries as a substitute for cover disks. Surprised? I bet you are. This is however the way to keep the costs of publishing down. The quality of the magazines is high and the readers are kept up to date with the latest developments on the Amiga scene. Some of them even have their own bulletin boards to keep in touch with their readers.

An average Polish Amiga enthusiast is not much different from any other that lives in your neighbourhood. He or she enjoys playing games, programming in AMOS and taking advantage of the Amiga's graphics capabilities. The A500 is still a good seller and the most popular machine, but an increasing number of buyers decide on A600s and A1200s. Those who can afford it go for A4000s. Even CDTV made it to Poland and is selling in small numbers.

Professional users choose Amigas for DTP and video work like titling, production and editing. Even Polish Television uses Amigas for titling because they are far cheaper than high-end silicon graphics hardware. Most frequently purchased additional hardware includes hard disks, memory expansions and accelerators imported from Germany. Those interested in video work are even able to equip their computers with genlocks and frame-grabbers.

There are also some small software firms that write educational software. The most interesting are spelling checkers for children learning the Polish language and English-Polish-English dictionaries. The most popular development system seems to be AMOS, because it enables users to develop good quality software without the need to obtain expensive ROM Kernel Manuals – which are hard to get even if you can afford them.

Poland is often mentioned among countries where piracy is at an exceptionally high level. This level of piracy is due to the lack of any comprehensive copyright protection law. The good news however is that the Polish parliament is working on new bills and the situation should improve. Viruses are another problem because they are often present on pirated disks, so the computer magazines publish regular updates on the latest viruses and inform their readers on the best ways to fight them.

The ever-present problem with computers in Poland is the difficulty of adapting foreign software to the local language. The standard ASCII table simply does not contain the additional characters used in the Polish language. Fortunately there is an easy way of getting round that, and now with "Localization" being introduced in the system software, things have improved a lot. Steps are being taken to obtain permission from Commodore to develop a fully localized and approved version of Workbench. This could considerably increase the Amiga's share of the Polish computer market, all thanks to the flexibility of the Amiga and its system. The only serious rivals, PC-compatibles and Macintoshes, are either too expensive or do not offer a standardised way of handling the extended alphabet.

So remember, wherever you go in this world there is bound to be an Amiga user somewhere. Exciting, isn't it... AS

POLISH CONTACTS

If you're interested, here are some addresses:

• ***Magazyn Amiga* – monthly**
Redakcja "Magazyn Amiga", ul. Stepinska 22/30, 00-739, Warszawa, Poland
☎ +48 (022) 41 51 21
FidoNet: 2:480/33.0 (sysop: Mr Rafal Wiosna)
Editor: Mr Marek Pampuch
The magazine runs its own PD library and has a "gallery" section for graphics (two pages). All submissions of software should be public domain, freeware, or shareware. Submitted graphics are treated as public domain.

• ***C&A – Commodore and Amiga* – monthly**
Redakcja "C & A", ul. Wasilkowskiego 7, 02-776, Warszawa, Poland
☎ +48 (02) 643 18 40
Editor: Mr Klaudiusz Dybowski
This magazine also runs a PD library and welcomes submissions. It should be PD, shareware or freeware.

• ***Bajtek*** – The biggest monthly computer mag for amateurs there is in Poland. They have a section on the Amiga each month.
Redakcja "Bajtek", ul. Wspolna 61, 00-687, Warszawa, Poland
☎ +48 (022) 21 12 05
Editor: Mr Jaroslaw Mlodzki

The address of Commodore's branch is :
Commodore Büromachinen GmbH, Biuro Przedstawicielskie, ul. Kielecka 7, 81-303, Gdynia, Poland
☎ +48 (058) 21 17 82
Manager: Mr Andrzej Draczkowski

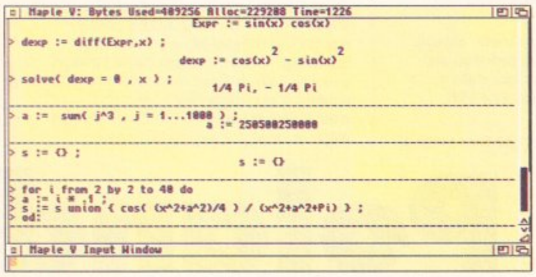
Jacek Artymiak's e-mail address is jartymiak@cix.compulink.co.uk
and his Fido address: Jacek Artymiak @ 2:250/107.110

It figures!

If computers are just like glorified calculators, why can't you do algebra on your Amiga? Well, with Maple V, you can! Alex Gian figures it all out.

Everybody has used computers for numerical calculation, but how about using them to do algebra – those devilish abstract equations that plague so many schooldays? It's not such a bizarre idea: the rules for simplifying and solving mathematical formulae follow a fairly consistent logic, which can be programmed in a machine.

University AI (Artificial Intelligence) departments have been working on this problem for ages. One of the first symbolic maths packages was *Macsyma,* a behemoth of a program, which started growing in the early '60s and has hardly stopped since. It was a brilliant innovation sought after by just about every mathematician and research scientist. Nowadays, programs that previously needed institution mainframes will run happily on desktops, and many new algebra packages have appeared, the most notable being *Mathematica,* with its impressive real-time PostScript display.



The Maple worksheet interface. It may not be visually stunning itself, but the program can take anything you input here and do mathematical magic with it.

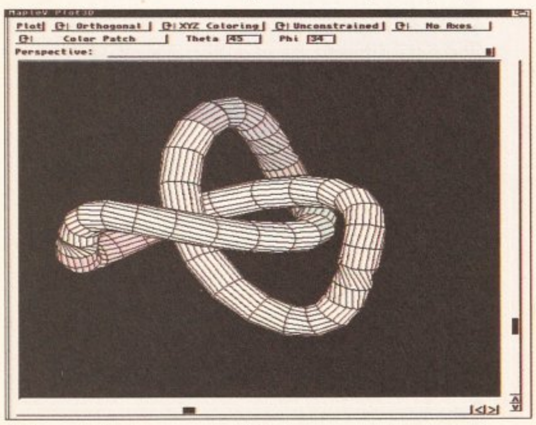
The recent arrival of the *Maple V* Symbolic Algebra System – from Waterloo Software, at the University of Waterloo in Canada – finally brings a world-class maths package to the Amiga. *Maple* is the product of ten years of research, and belongs to a new generation of software. This fact is immediately apparent in its efficiency and compactness. Intelligent software engineering has kept the core program identical, irrespective of whether it is running on a Cray supercomputer or a humble 16-bit.

THE MAPLE V PACKAGE

Two versions of *Maple* are supplied, one for machines with maths coprocessors. Installing the program means unpacking four disks to your hard drive. The largest part of the package is *Maple's* libraries, which contain the system's clever bits: the algorithms and knowledge base that have been built up over ten years.

There are also about 2Mb of help files. This is just as well, because the manuals take the form of three large hardbound textbooks, weighing several pounds. *Maple* is certainly not lacking in documentation... Support is also available directly over the electronic networks, and there is even a library of useful *Maple* PD contributions.

Maple V can be launched in three different ways. By default it will open its own two-window system, one window for input and one for output, and in this mode you can save your entire work session. Alternatively you can run *Maple V* straight from the CLI, or even in the background, in ARexx mode. The stated minimum requirements are Workbench 2.0, 8Mb of free hard-disk space, and 2Mb of free RAM. You may even get by on less, but real work, especially 3D plots, will need 4Mb or more.



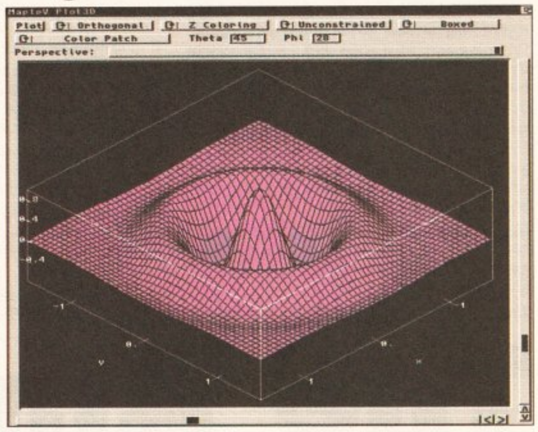
Tubes of fixed or varying thickness may be plotted about a defined curve in 3D space. Nothing to it!

USING THE PROGRAM

I cannot possibly describe all of *Maple's* capabilities in this small space. All I can say is that whatever mathematical requirement you may have, *Maple* will meet it. Beyond that, let's look at two of its special strengths.

Maple can be used as an interactive environment for learning and exploring. In interactive mode the program accepts your input in standard "computerese", and then reformats it on the screen. For example you could enter this (all in one long line):

```
fn = ((a*x^2+b*x*y+3*y^2)
/(sin(x^2)*(cos(y))^2))^3
```



No math package is complete without this – just perfect for designing your own sombreros. Caramba!

and it will be "prettyprinted" or formatted and output as

```
       /   2              2 \ 3
       | ax  + bxy + 3y     |
fn  =  | ---------------    |
       |      2        2    |
       \ sin(x ) cos(y)     /
```

Next, the input is evaluated and a

JARGON BUSTING

AI: Artificial Intelligence. The arcane science of attempting to create machines that behave in human-like ways; if Don Quixote were around today, he might well be into it. AI has produced masses of dubious theories about the mechanics of thought, but also some excellent programs.

Data types: These are used by the machine to store representations of data in memory. For instance, BASIC stores integers, floating point numbers, and characters (letters) in different ways. *Maple* uses data types to represent formulas in the same way as you would write them. For example, fractions are stored as a numerator and a denominator.

Knowledge base: A database of rules, strategies and information used by the core program of an AI application to arrive at a result.

LaTeX: A variant of the *TeX* (pronounced **tech)** program, which is very popular for academic typesetting and is particularly well suited to handling awkward equations and so forth.

PostScript: A page-description language that can reproduce any graphics at professional level. Nowadays it is built into many printers and is the de facto standard for typesetting. However, PostScript is an independent language and can run on its own. There is an excellent PD Amiga implementation.

Symbolic computation: By contrast to numerical computation or "number-crunching", this involves the manipulation of symbols, which represent some real-life objects. In symbolic algebra, these are the elements that make up terms and equations.

A FUTURE YOU CAN COUNT ON

Admirably, one of Waterloo Software's stated intentions is to make *Maple* affordable for everyone. To this end, they have recently released a Student Edition of *Maple*, costing only US$100. This is a cut-down version, but still quite capable of any maths up to second-year university level. Unfortunately, it is only available for PC-compatibles and Macs at the moment – so it will only run on Amigas with emulators.

I'd like to see a Student Edition of *Maple* (or any algebra package for that matter) on the Amiga, but I'm not holding my breath! Are there no GCSE, A-level, or university math students with Amigas out there? Or are such products considered somehow "not right" for the Amiga? Perhaps we all have to do something to correct this attitude.

The Amiga's multitasking environment and well-established multimedia software – for example, *AmigaVision* – could easily be used to create educational courses with *Maple* as their core. "Lessons" could be stored on CD-ROM, making excellent interactive tutorials.

Maple's main rival, *Mathematica*, has already started taking this approach, quite successfully. Several schools and colleges in the US have also done work along these lines. Personally, I believe that this kind of software will revolutionise the way that mathematics is studied. At last, maths made fun for everyone!

If Commodore are really committed to multimedia CD-ROM technology, there could be quite a bit of potential here.

solution is returned. *Maple* is not limited to giving complete numeric solutions: if only a partial solution is possible, then that's what you'll get. If an equation contains undefined constants, these will appear as part of the answer. For example, solving two equations in two variables:

```
solve({x+y=5, 3*x-y=7}, {x,y});
```

gives us **{ x = 3 , y = 2 }**, but

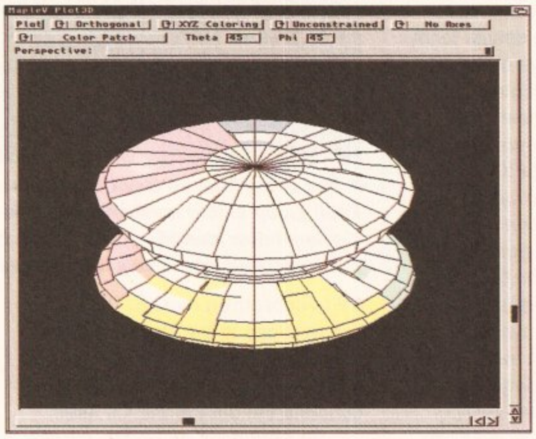
```
solve({x+y=5, a*x-y=7}, {x,y});
```

gives us **{ x = 12/(a+1) , y = (12*a/(a+1)-7 }**

These examples merely hint at the abilities of *Maple*. Much, much more is possible: equations can be simplified, differentiated and integrated. Matrices, trigonometry, statistics, series and even geometry are all handled with ease. Multiple graphing options enable you to visualise your work.

Maple also boasts very powerful integer algorithms. Prime factors of enormous numbers are found after only moments of calculation. An unaccelerated Amiga takes only 40 seconds to calculate the value of 3**10,000 (a 4,894 digit number).

The educational value of interactive use is undisputable.

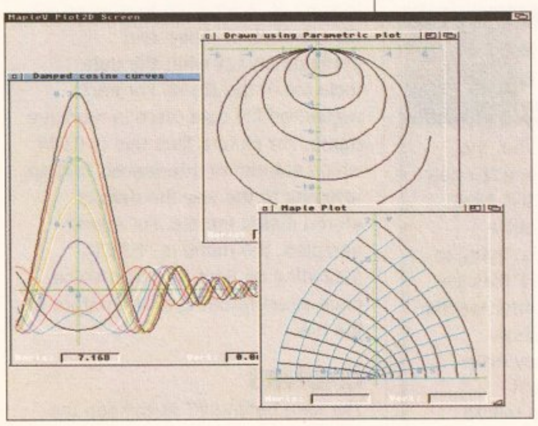


Shapes can be modelled using spherical coordinates. But it's a serious math program, not an art package...

Playing around with *Maple* was the best maths refresher course I've had in years, and great fun too. Subjects which I was not particularly fond of, way back when, suddenly became interesting when the machine was doing the drudge work!

A second great area of potential is that *Maple V* is a full programming language in its own right. Its main strength is the large number of data types that it supports (over 100), which enable it to represent not only numbers, but also equations, formulas, tables, graphs, and other complex data structures.

Naturally, all the features you would expect from a modern high level language are present, including loops, IF-statements and definable procedures (functions). All the *Maple* libraries are written in this language, so the system is fully customisable.



A family of related plots, demonstrating parametric plotting where x and y are specified in terms of t, and a conformal plot of z^2. See? Told you it was serious.

In addition, once you have developed a project, *Maple* can convert it to optimised C or FORTRAN for your compiler. LaTeX code for formatting is also supported.

Maple's power and speed have won it an enviable reputation and awards worldwide. It may not have an elaborate output display like some of its rivals, but it is very fast, and – most importantly – it has solid, dependable, bug-free code. Many professionals consider it to be the best available package.

That is certainly true on the Amiga. There is absolutely no doubt of the plus side: *Maple V* is equipped with an ARexx port that enables it to communicate with other Amiga programs, so you can use *Maple's* calculating engine with graphics programs, presentation software, DTP packages, you name it. Only your imagination and your machine size limit the possibilities. The Amiga is the *only* machine that allows *Maple V* to multitask like this.

On the minus side, the first problem I noticed is that the Amiga's printer driver is not supported. Graphics files can only be saved in IFF format or PostScript. Good grief, does everyone have PostScript printers in Canada?

I also found problems in the BREAK command, with the program refusing to break out of long calculations. When it did manage to break (using **[Ctrl]-C** in CLI mode) it exited altogether, rather than just stopping. This problem needs immediate attention. Other problems I found were all minor and easily rectifiable.

SUMMING UP

You may think that this is a highly specialised program, aimed only at experts... Not true! If you deal with any kind of mathematics at all, you should have a program like this. In the future, with more powerful machines and better understanding of software science, algebra packages could become as commonplace as today's spreadsheet.

Unfortunately, just because everybody *should* have one, it doesn't mean that everybody *can* have one! A number of problems must still be overcome. The full *Maple V* package is too heavyweight and too expensive for the average user. At 530 Canadian dollars (that's over £300) it is a product for the professional user and the dedicated hobbyist. Even so, it still costs one-third less than the PC version – and, like all top-notch programs, it is worth every penny. AS

SHOPPING LIST

Maple V Symbolic Algebra Package .... CAN$530
By Waterloo Maple Software,
160 Columbia Street West, Waterloo,
Ontario, Canada N2L 3L3.
Student Edition .... US$100
(in the UK, about £100)
(only for Amigas with PC or Mac emulators)

Available in the UK from
Chapman & Hall,
2–6 Boundary Row,
London SE1 8HN,
☎ 071 865 0066.

CHECKOUT MAPLE V

Features ●●●●●
Couldn't really have any more to offer. Full ARexx interface too!

Interface ●●●○○
The user interface is simple, but it needs some attention before it is 100% up to the Amiga's level.

Ease of Use ●●●●○
Straightforward, assuming you have elementary acquaintance with programming and an interest in mathematics!

Performance ●●●●●
Very fast algorithms, even on unaccelerated machines.

Documentation ●●●●●
No problems here! Copious documentation both on paper and on line.

Value for Money ●●●●○
The price is low considering what you get, but still a lot to invest. I'd like to see it cheaper still.

Overall rating ●●●●○
An excellent package, but will it be fully supported on the Amiga?

Setting the standard

IFF files are almost everywhere, but just what are they? Malcolm Maxwell explains the Amiga's standard file type.

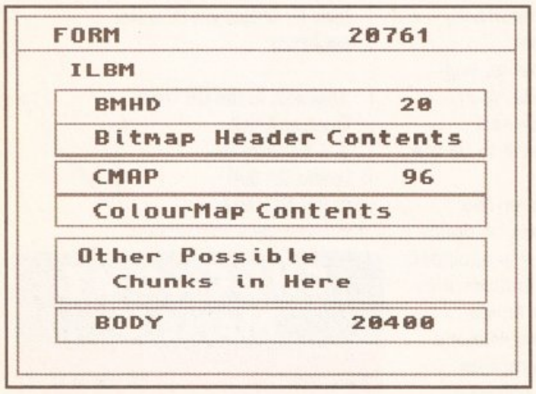
If you've ever saved a picture file from a paint package, or a sound file from a sampler, chances are you've used the IFF. If you've ever used a desktop publishing package, or a word processor, you've probably had the option to use it. But what are IFF files? Are they pictures, sound, text, animations, music scores? If they are all talking about the same thing, why isn't it possible to load an IFF file from a text editor into a graphics package? In short, what is this IFF thing anyway?

THERE WAS A DREAM...

The IFF (Interchange File Format) standard was designed by Electronic Arts to promote harmony and the free interchange of information throughout the industry, based on the very sound idea that programs should save their files in a way that could be easily read by other programs. In this way each package wouldn't need a stack of conversion programs to use this information. Theoretically it would just need two, one for reading in a file and another for saving it in the agreed format.

Internally the package can do anything it likes, just so long as it presents this same format to the world. The dream of the design team was that this interchange philosophy should eventually be adopted by everyone, that data compatibility problems (such as even now affect owners of the new AmigaDOS versions) would cease to exist, so that free exchange of information would then ensue, with global harmony not being too far behind.

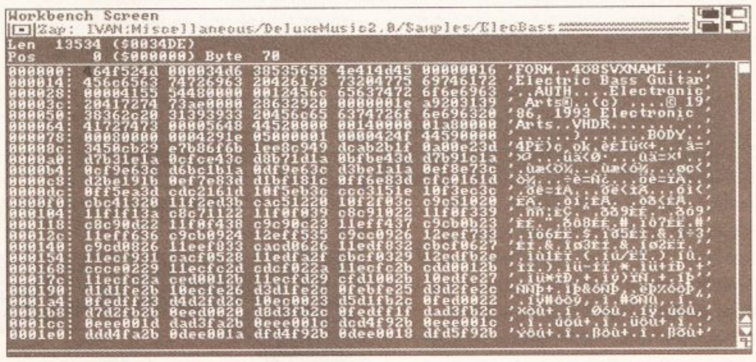
The IFF format provides a standard for files of any type. It doesn't matter what the information inside the body of the file is, so long as it is arranged in the right way. This is why the description "IFF" can apply to so many different file types, and why these file types aren't interchangeable with each other. You can't read in a text IFF file as a graphics file because they hold two different types of data. But they're both IFF files because of the way they both store that data.



The standard ILBM picture file layout. Each box is a chunk in the file, with the keywords identifying them.

BEHIND THE SCENES

The idea behind the structure of the IFF is deceptively simple. There are two sections to the file: the header, which contains all of the control information, and the body, which contains the data of the file itself.



A Hex dump from an 8SVX file – a sound sample saved in standard IFF format. Each group of four numbers relates to two letters in the right column. Note the four-letter identifiers, the IFF file hallmarks. The numbers before "BODY" not translated into letters are the sizes of the chunks and file in question.

So what does an IFF file actually look like? One of the first things you could do is have a look inside one.

All IFF files are saved as bytes of data, so most of it won't make any sense. (If you can understand more than half of it, you really need to get out more often.) If you load it up into a file utility that can read and display files without trying to translate them into ASCII (a normal text file), you will see a layout something along the lines of the hex dump in the diagram. (You could also read it into a normal text editor like *Edword* or *Memacs*, but since this would try to interpret it as an ASCII file, not all of it would be intelligible.)

The diagram to the left shows the "envelope" of the IFF file. The idea is that the file should contain all the information necessary for using the raw data enclosed in it. What this amounts to is a header for a file filled with everything you would ever want to know about that file, like its type, size, whether the data has been compressed to save space, and so on. On top of this there is then some specific information for that kind of file, like the display size for a picture or the sample rate for a sound sample.

The first thing to notice about the layout is the use of keywords, such as "FORM" and "8SVX". Any program to read IFF files must look for these first. All IFF files, no matter what they contain, have the keyword "FORM" as the very first thing in the file. If you see this word, you know that you're looking at an IFF file.

After a gap in which the size of the file is stored, the next few letters indicate the type of file you are looking at. A program to read an IFF file can look at these and immediately tell what the data included in the file is. For each registered file type there is a unique name. For picture files this is ILBM, which stands for Interleaved BitMap, referring to the way the data is stored inside the file. For sound samples, the name is "8SVX", indicating an 8-bit Sampled Voice, once again referring to the nature of the file.

CHUNKS

The idea behind IFF is to keep the information inside a file in as general a form as possible, and in keeping with this philosophy, all information

DESIGNED BY COMMITTEE

In the beginning was "EA IFF 1985". This was the document published by the standards committee set the task of designing a truly interchangeable file format for use in any type of application. On that committee were representatives of Commodore-Amiga and Electronic Arts, and unlike a lot of standards committees they produced an impressive piece of design work.

Before the IFF standard there were many different standards for various types of file – ASCII and Interscript for text; PostScript and PICT for graphics. All of these individually agreed with the design philosophy behind IFF, with many of them serving as a template for the new format. The problem was that no one format covered all file types or had enough influence to dominate over the others. The result was a stack of conversions required for each file type.

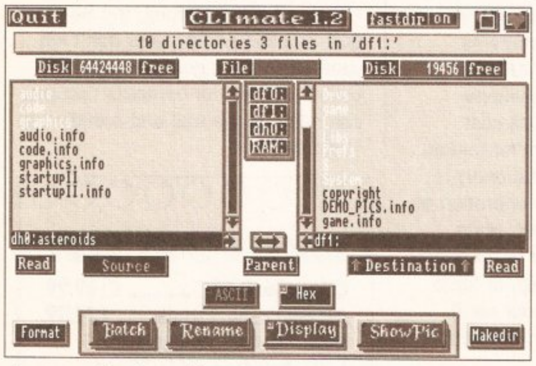
This is still the case on some other computer formats, but the Amiga has benefitted immeasurably from the introduction of IFF. Next time you try to put together a multimedia show, imagine trying to do it without using any IFF files and you'll see what I mean. After loading all the necessary translation protocols – assuming they even exist! – to get the different applications programs to talk to each other, you'd be lucky to have enough space left for any data!

inside the header is kept inside blocks of related data called *chunks*.

Each chunk has a four letter ID similar to those for file types. Like the files themselves, chunks can contain any information you want, from vital display or replay information to the name of the author's cat, should it be thought important.

Immediately after each chunk ID comes the size of the chunk, and after that the chunk itself. They are arranged so that if a program reads a chunk it doesn't know about, it can easily skip past it and on to the next. Provided that the information skipped isn't vital, the data inside the file can still be used.

In the example above, the first chunk has the ID VHDR (Voice Header). Not surprisingly, this



An example of a utility that enables you to look inside an IFF file, using a "display HEX" facility.

contains all the information that you would expect in a sound sample, such as size, volume, sample rate and so on.

Another chunk in the sample is ANNO (annotation). This doesn't play any important role in the sample, but gives the author a chance to expressive himself in any way he feels relevant.

The end of the IFF header is marked by the ID "BODY", after which comes the raw data of the file itself. What the reader program does with this information is its own problem, the IFF file has executed its job beautifully.

PICTURE FILES

You've already seen inside of the 8SVX sound sample, which has a relatively simple structure. The wonderful thing about the IFF format is that it can be used for anything you turn your mind to. For example, the format most people have had dealings with is the ILBM format, commonly know as the picture file, used by many applications to save graphics files.

As with the 8SVX, there is the FORM to indicate that this is an IFF file, with the name of the file type immediately after the size. The next in line is the name of the first chunk, BMHD (BitMap Header).

The BitMap Header is essential if you are going to display the file in the way the original artist intended. Without it you could still maybe make a good guess about screen size and so on, but it may turn out to look quite weird. Included in this chunk then is the width and the height of the display you should use. There is also the position inside the screen where the picture should be displayed, the number of planes in the image and so on. (The number of planes indicates the number of colours that are available when drawing the picture – more planes, more colours, more memory needed to display it.)

This chunk also includes some of the more obscure aspects of image production, like masking, compression technique used and whether there is a "transparent colour" in the picture (the colour given to a pixel if you want the background to show through).

OTHER CHUNKS

The ILBM format has many other chunks, some of which are optional. For example, the palette (the collection of colours used in the picture) is stored in the CMAP chunk. This is stored in a way that is easy to expand, enabling support of the new AA chipset, for example.

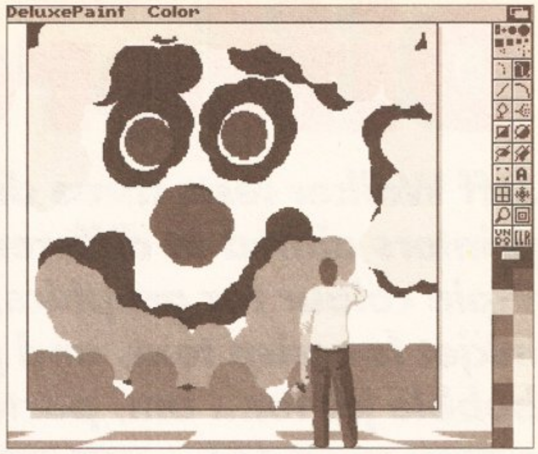
Another chunk, this time unique to Amiga machines, is the CAMG chunk which gives information about which of the Amiga screen modes to use while displaying the picture – Low Res, High Res and so on.

Given all of this information, all the reader program has to do is extract whatever it needs from the file, de-compress the body if compression has been used, and display. Simple really. It's just a matter of asking the IFF file the right questions.

FANCY A GO...?

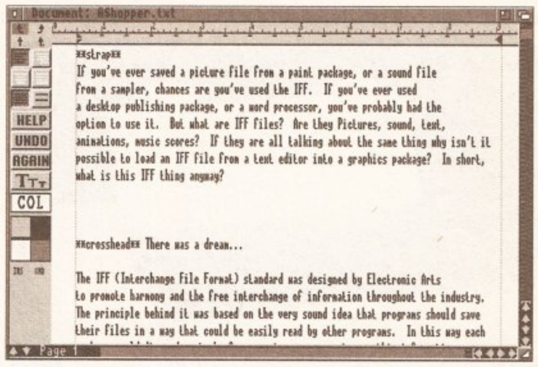
There are many other types of IFF file, including various music and graphics modes, archivers and so on. Every FORM has to be registered at the central IFF registry to make sure that no two types use the same ID.

Because the IFF format can be used for any kind of information, the sky really is the limit. It can be used for any application you can think of,



Two applications which both use IFF files to store data. DeluxePaint stores pictures as FORM ILBM...

and if you come up with a new one there is nothing to stop you registering it as a format. Just specify it properly, stick it on a disk and send it in to the registry. The address can be found at the back of the third edition of the Amiga ROM Kernel Reference Manual on *Devices*, published by Addison-



And Wordworth can save text as FORM FTXT (an IFF text file), aiding exchange of data and compatibility.

Wesley, which also has a copy of every reference you could ever want concerning the IFF format. Assuming that the registry accept your proposal, your type will be registered and released for the world to use.

Immortality through the IFF format? Well, maybe not. But if your format is useful enough and is adopted, people will probably be back to thank you soon enough.

SPREAD THE WORD!

The IFF format enhances the usability of the Amiga considerably, as you already know if you've tried using machines without any similar standard. There is nothing more annoying than not being able to find a graphics package that will let you save your file in the format your DTP package expects.

The widespread use of the IFF is another of the facets of the Amiga that help to make it such a good platform for so many professions. And the more it is used, the more it becomes a universal standard. Once it is in real multi-machine use, world harmony can't be too far behind. So go on, spread the word. AS

JARGON BUSTING

8SVX: 8-bit Sampled Voice. Identifier for sound IFF files.

ASCII: American Standard Code for Information Interchange. Another example of an interchange file format. Generally regarded as the standard format for text files, but does not include format commands and text styles (such as italics and boldface). Plain text is all you get.

BitMap: This refers to a method for storing graphics information pixel-by-pixel which is now standard throughout many machines, though not all use exactly the same format.

Chunks: Collections of control information about a file grouped together under one identifier.

DTP: Desktop Publishing. An applications program integrating graphics and text, so it relies heavily on the easy interchange of information.

FORM: The identifying tag at the beginning of every file in the IFF format. Find this and you know you have an IFF file.

Header: The preamble at the beginning of a file, separate from the main body, which holds control information about that file rather than actual file data.

ILBM: InterLeaved BitMap. Identifier for picture IFF files.

Memacs: The text editor included with Workbench.

Raw data: The meat of the file. The information that directly makes up the sound sample, picture or whatever it may be. See *Header*.

Different strokes

Jeff Walker tests three different printers aimed at different uses – 9-pin colour for graphics, desktop inkjet for crisp text, and portable bubble jet for... um, portability?

A WARNING ABOUT RATINGS

These are three totally different types of printer and they are rated here in comparison to other printers of their own types, *not against each other.* For instance, if a bubble jet has a Print Quality rating of 4, then a 9-pin printer, in comparison, must have a Print Quality of no more than 2. But compared to *other 9-pin* printers, the Citizen deserves a Print Quality rating of 4, and that's what it gets. Remember, you can't compare these ratings directly.

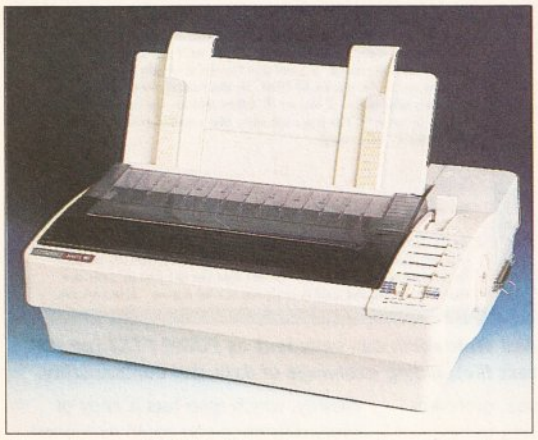
CITIZEN SWIFT 90C

There aren't many good reasons left for buying a 9-pin impact dot-matrix printer.

Time was when they were much cheaper than any other type of printer, but the price of higher resolution 24-pins, inkjets and bubble jets has tumbled, in a few cases, to less than 9-pin prices. However, if you need to print in colour, then a 9-pin dot-matrix colour printer is by far the least expensive option, and the Swift 90C has a surprising number of quality features, a class above the average. To start with it prints text in draft mode at a very fast 216 characters per second (cps), or if you want even greater speed a special high speed draft font that prints at 240 cps.

For more important printouts you have the choice of six "near letter quality" (NLQ) fonts – Roman, Sanserif, Courier, Prestige, Script and Orator – and their appearance is good for a 9-pin, but because these are printed in two passes the speed drops to a very slow 45 cps.

The Epson emulation in the Swift 90C is FX850, and this works okay with the standard Workbench **EpsonX** printer driver. To get the best out of the printer, especially for graphics printouts, you will need to spend a few more pounds on *Citizen Print Manager* (which you can get direct from Citizen if your dealer doesn't stock it). This doesn't yet have a dedicated Swift 90C driver, but the Swift 9 drivers seem to work perfectly for both text and graphics.



The Citizen Swift 90C: if you have a soft spot for the art of Roy Lichtenstein, recreate it on a colour 9-pin!

Ah yes, graphics. What do they look like? Dotty. A light green colour, for example, will print as solid yellow covered in widely spaced and very visible cyan and black dots. A pinkish hue will print as a mixture of widely spaced and very visible magenta and yellow dots, with the odd black dot here and there. The only colours that will print as solid colours are pure magenta, cyan, yellow and black, the four colours on the ribbon.

Now, I happen to like the appearance of 9-pin dot-matrix colour output; it reminds me very much of the American colour comics I used to read when I was a kid. It's swings and roundabouts, but if you mainly intend to print text I'd advise against a 9-pin printer, if you mainly intend to print colour graphics I'd recommend a 9-pin rather than a 24-pin printer.

An auto-loading, one page at a time cut-sheet feeder comes as standard with the Swift 90C – an automatic many-page/envelope feeder is available at extra cost – and a tractor mechanism for fanfold paper and continuous stationery is built-in. It's very quiet in operation as dot-matrix printers go, but, while printing graphics or near letter quality text, it's still noisy enough to force you to poke a finger in your ear if you're trying to have a conversation on the phone.

One last, and very important, point to note is that colour printer ribbons get "dirty" very quickly as the coloured strips on the ribbon become contaminated with colours from the other strips. It depends on what kind of pictures you are printing, but from a new ribbon you will get only about half a dozen graphics printouts before the output starts to become noticeably "streaky".

The streaks are not caused by the Amiga, nor the printer driver, nor the software doing the printing, but by the contamination of the colours on the ribbon. No software can "cure" it – all you can do is buy a new printer ribbon, and at about £15–£20 a time there's a case for arguing that "perfect" colour printouts from impact dot-matrix printers (including 24-pin ones) are very much more expensive than printouts from a colour inkjet printer, which might cost two or three times as much to start with, and might need special paper that costs more, but will pay you back in the cost-per-printout and with much, much higher quality colours.

Don't get me wrong, the Swift 90C is a fine printer. Just don't kid yourself that it's good enough if you're after colour printouts that you can hang on the wall and proudly say "I did that".

SHOPPING LIST

Citizen Swift 90C £169.99
Automatic sheet feeder £79.99
From: First Computer Centre, Unit 3, Armley Park Court, Off Cecil Street, Stanningley Road, Leeds LS12 2AE.
☎ 0532 319191

Citizen Print Manager £14.10
From: Citizen Europe Ltd, Citizen House, 11 Waterside Drive, Langley Business Park, Langley, Berks SL3 6EZ.
☎ 0753 584111

CHECKOUT CITIZEN SWIFT 90C

Features	●●●●●
Print Quality	●●●●○
Speed	●●●●●
Value for Money	●●●●○
Overall rating	●●●●○

EPSON STYLUS 800

Mention the word "inkjet" and the names Canon and Hewlett-Packard spring immediately to mind.

But Epson make inkjet printers too, and they are pushing this one, the Stylus 800, as their "hottest inkjet yet", thanks to something called "cool crystal technology". It's certainly a novel design. An automatic 100-sheet feeder is in-built, and a slot at the back enables you to feed single sheets if necessary. There's no tractor feed mechanism as standard or as an optional extra, so you can't use fanfold paper with this printer.

The Stylus 800's biggest asset is its built-in fonts. Roman and Sans Serif can be printed in fixed-width or proportional sizes, and Courier, Prestige and Script just in fixed-width, but all of them in the usual range of sizes (10 to 20 characters per inch) and the usual range of styles (bold, italics and so on), at 150 characters per second in 10 cpi mode.

There are also four scalable fonts, the fixed width Roman and Sans Serif and the proportional Roman T and Sans Serif H. These four fonts can be printed with lovely smooth curves and diagonals in any size from 8pt to 32pt in 2pt steps.

The technology that makes these fonts scalable is Epson's ESC/P2 printer control language, and there is currently only one piece of Amiga software that can take advantage of the speed benefits of having a WYSIWYG display on-screen, mixing and matching fonts and sizes however you like, but using the printer's in-built and quick-to-print ESC/P2 scalable fonts instead of software scalable fonts (like Compugraphic ones) which take much, much longer to print. That software is *Wordworth*, the word processor from Digita.

Well, to be perfectly accurate, because *Protext* enables you to send printer control commands directly to the printer, it too can be used with



The Epson Stylus 800: "cool crystal technology" that promises near-laser quality – if you can find a driver!

ESC/P2 scalable fonts, but *Protext* has no WYSIWYG display, so formatting your documents will require a lot of trial and error, plus a lot of fiddling with control codes.

Still, output quality of all the fonts is superb throughout the range of sizes, even using the old and rusty Workbench **EpsonQ** printer driver.

Graphics quality is another kettle of fish. The **EpsonQ** driver has a maximum graphics resolution of 360 by 180 dots per inch (dpi), whereas the Stylus 800, because technology has moved on since that driver was written, can produce 360 by 360 dpi graphics. So to get the best out of this printer you need to get hold of a better Epson-compatible printer driver.

A PD library will be able to help you there, but there's a further snag.

The Stylus is a 48-jet printer, not a 24-pin, so to get the best out of it you need a printer driver that can drive all 48 jets at once. A normal 24-pin Epson-compatible 360 by 360 dpi printer driver will work, but it will have to print graphics in several passes, which will be slower and will put more ink on the page than is necessary.

The only 48-pin Epson graphics driver I know of is the **"PinDriver"** that comes with the *Studio Printer* software, and after some poor printouts from *DPaint* and *TruePrint* using the **EpsonQ** driver, the *Studio* driver is the one I used to test the Stylus 800's graphics capabilities.

The quality to compare against is that of the latest 360 by 360 dpi Canon bubble jets – not the BJ-10sx reviewed on this page, but the BJ-200 and BJ-230, which feature Canon's latest technology and produce high quality printouts with no "banding" evident.

That's where the Stylus 800 falls down. Its graphics printouts will look wonderful if you are used to dot-matrix output, but they are always covered in horizontal thin black lines caused by strips of the printout overlapping because the paper has not been fed through quite far enough. The Canon bubble jets used to suffer from this problem as well, but this has been cured in the BJ-200/230. And, of course, the Hewlett-Packard DeskJet 510, another competitor in this market, doesn't suffer from banding either.

So although the Stylus 800 has a lot going for it, especially for text output, it's about a year or so behind the times when compared to rival printers of about the same price.

SHOPPING LIST

Epson Stylus 800 ....£294.90
From: Hobbyte Computing, 10 Market Place, St Albans, Herts AL3 5DG.
☎ 0727 856005

Studio Printer software £49.95
From: Just Amiga Monthly, 75 Greatfields Drive, Uxbridge, Middx UB8 3QN.
☎ 0895 274449

CHECKOUT Epson Stylus 800

Features	●●●●○
Print Quality	●●●○○
Speed	●●●●○
Value for Money	●●●○○
Overall rating	●●●○○

CANON BJ-10sx

One of the worst features of most printers is their size. Often they are as big as your computer, or even bigger, and take over a big slice of your desk.

Not the Canon BJ-10sx – it's a 360 by 360 dpi bubble jet printer, and it's portable. It's the latest version of the printer that began life as the BJ-10e, then became the BJ-10ex. These are not three different models, but the same model which has been "upgraded". Old stocks of the BJ-10ex are still being sold for £30–£40 less than the BJ-10sx – which is a bit faster, managing text at 110 cps in both economy and high quality modes, and that's about it.

There are five in-built fonts, but which printer you set the BJ-10sx to emulate will dictate which of these fonts are available to you, and in what sizes and styles.

In Epson LQ mode you have Draft, Roman and Sans Serif, all of which can be printed fixed width at 10, 12, 15, 17 or 20 characters per inch (cpi), or proportionally spaced. In this mode you will need to use an Epson compatible 24-pin printer driver. EpsonQ works OK.

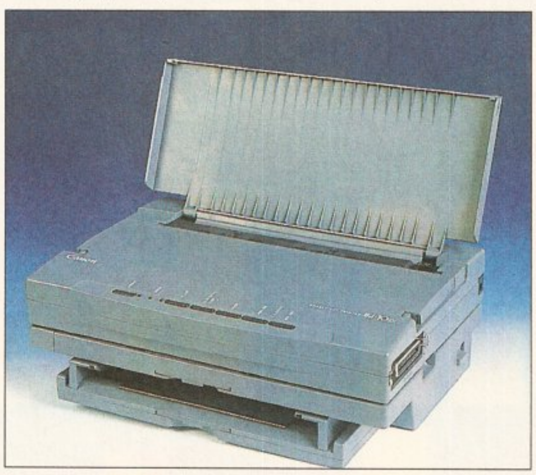
In Proprinter X24E emulation you have Prestige at 12 cpi and Courier in all the other pitches. But as far as I know there isn't a proper Amiga printer driver for X24E emulations, so we can forget about this mode.

In BJ-130e emulation you have just Courier, which can be printed at 10, 12 and 17 cpi, plus proportionally spaced. In this mode you can use either the Commodore BJ10 driver that comes with Workbench 2.1 and 3.0, or the proper Canon drivers and software, available free from Canon Technical Support. To get the absolute best from any Canon bubble jet you need the *CanonStudio* software, which is shareware. There's a demo of it on the disk you get from Canon

For text printouts you might want to be in Epson LQ mode, because this gives you more fonts and styles, but for graphics you'll be better off in BJ-130e mode, which produces "48-pin" graphics far superior to the Epson LQ "24-pin" ones. If you are doing "DTP" type printing from programs like *Wordworth, Final Copy, PageStream, ProPage, PageSetter* and the like, then you'll be in BJ-130e mode most of the time – such programs print in graphics mode, even if they are printing mainly text.

There's an optional automatic 50-sheet feeder, or a built-in paper guide hidden under a flap on the top for feeding in single sheets. There's no optional tractor mechanism, so fanfold paper cannot be used with the BJ-10sx.

Being a portable printer, the BJ-10sx naturally has a battery built-in. This is charged by the power supply unit that comes with it – a full charge, which takes about 10 hours, lasting for up to 40 minutes of continuous printing. When the battery is low the Power indicator blinks and the On-line and Error indicators go off. If you are in the middle of printing when this happens, and not near a mains power supply, then you can press the On-line button to print a few more lines at a time until the battery pack is fully discharged.



The Canon BJ-10sx: won't cramp your space or your style (it says here in quite nice 360 x 360 dpi text).

The output quality from the BJ-10sx is fairly high for text, but graphics and DTP printouts, using the Commodore drivers, are always "banded". The one I had for review produced thin black stripes across printouts, but I've seen others that produce thin white stripes because the paper is feeding through a little too far. Using the Canon drivers and the *CanonStudio* software, which enable you to select different dither patterns for graphics, you are able to eradicate a lot of this banding, especially if you print on to a better quality paper than the photocopier stuff, so the printer can grip it well.

Even so, the BJ-10sx is not the answer if you want inexpensive but extremely high-quality output. If, on the other hand, you need a low-cost but fairly high quality and very quiet printer that is reasonably fast, or if you want a printer that won't take up much desk space and can easily be carried in a briefcase, you could spend a lot more and do a lot worse than the BJ-10sx. AS

SHOPPING LIST

Canon BJ-10sx £227.99
Automatic sheet feeder £49.99
From: Phoenix Computer World, Unit 2, York Towers, 383 York Road, Leeds LS9 6TA. ☎ 0532 350652

CanonStudio software £15
From: Just Amiga Monthly, 75 Greatfields Drive, Uxbridge, Middx UB8 3QN.
☎ 0895 274449

CHECKOUT Canon BJ-10SX

Features	●●●●○
Print Quality	●●●○○
Speed	●●○○○
Value for Money	●●●●○
Overall rating	●●●●○


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RIP ME OFF

You asked for letters regarding your cover disk. Cover disks are only worth the extra cost if they contain something you want. So far, _Amiga Shopper_ has not given me a program that I actually want. I have paid the extra money because your magazine is the best-presented Amiga magazine on the market, but when I look at the cover disk in the newsagents I pause before buying (whereas I used to snatch the magazine off the shelf).

What I would really like to see on the disks are AMOS programs, with source code and with no de-archiving necessary. I have written many AMOS games and utilities that are just sitting in a disk box. I would like to benefit from my long hours of sweat, but am afraid to send them to magazines in case I'm ripped off. What should I do?

Paul Michalak
Staffordshire

I understand what you're saying: I wouldn't expect you to buy the magazine if its contents were of no use to you.

We've archived programs on the disk to enable us to fit more on. Surely if you've managed to write useful programs in AMOS then de-archiving a cover disk can't be too much of a challenge?

We'd be glad to look at your AMOS utilities for possible inclusion in the magazine (look at the Listings section on page 62 to see how Tim Blacklock has benefited from this), and no, we won't rip you off.

TOO MUCH TO ASK

I agree with the concerns raised by Ian McNeill in his letter ("The Obligatory £600") in _Amiga Shopper_ 28. The price of third party products should be influenced by new products. In the case that Ian made the upgrade to the A4000-030 specification is more expensive.

Taking prices from Hobbyte's advert, I calculate that an A1500 with a GVP 80Mb hard drive and a G-Force '030 40MHz costs £1,548 in total. An A4000-30 with 6Mb and an 80Mb hard drive costs £1,099. The difference is nearly £500.

In my view the price of a third party system should be only slightly more than a Commodore system. A difference of £500 is too much to ask somebody to pay. If third party products are to remain a viable upgrading option, then their prices should be linked to the prices of the other options.

Sean Kelly
Isle of Man

DOES LOOK VERY BAD

I appear to have had my words slightly "abbreviated" in _Amiga Shopper_ 28's Making Money feature. It says something to the effect of: "Toby Simpson nearly went bankrupt because he couldn't get out of bed in the morning."

This really does look _very_ bad for me. I said that it was sometimes difficult to motivate oneself, especially if it was a nice day. I was trying to say that being self-employed is not as easy as it may seem, and it requires a lot of determination and will power. I actually worked very hard when I was self-employed, finishing two games and half-finishing _Global Effect_ before being taken in-house by Millennium. I prefer working in-house because of the resources available to me, and having a special place to go for work rather than working at home.

Toby Simpson
Millennium

We're glad to set the record straight.

THE OVERALL LOOK

I am having a problem with the "everything in colour" attitude that the magazine has taken. Not many months ago the viewpoint was "we only use colour for the 24-bit graphics reviews", whereas now almost everything is colour. Was it really necessary to have full colour pages for The Inside Story, Making Money, Window Shopper, Next Month, At A Glance, Competition and so on?

I feel the new colour is trying to justify the price hike, not trying to improve the overall look of the magazine. It would seem that the magazine has become popular and the bosses have realised they can make lots of money from the same services and are using colour as an excuse to make that extra profit.

Offering the next 12 months' issues at the "old" rates of £1.50 per magazine is the final nail in the coffin as far as I am concerned. It seems to be saying "We're pushing the price of the mag up to £2.50 whether you like it or not, and we're going to ruin the format too."

Mark Fisher
via CIX

As I explained last issue, the price increase is to keep the magazine profitable – our revenue from advertising is falling, and therefore we have to raise the cover price to compensate. It has nothing to do with the shift towards colour, which has been going on for some months. Our circulation now is around the 45,000 mark, pretty much the same as it has always been. The notion that increased popularity has provided the impetus for the price increase is clearly nonsense.

Your final paragraph – "whether you like it or not" – seems to imply that manufacturers of other products take referendums of their customers as a matter of course whenever they introduce price increases. I wasn't consulted when the price of petrol last went up, were you? As for ruining the format, well, that's obviously up to each individual to decide, but from where I'm sitting I see nothing but improvements in terms of the magazine's contents.

Because we already print colour on advertising pages, adding colour to some editorial pages costs us, and therefore you, no more money. We've done it because we think it makes the pages look better, it means you get a better idea of what products and screens look like, and it helps us make diagrams clearer.

THE MANUAL STATES

My Amiga 4000-040 boasts all sorts of expansion capabilities, and eventually I decided it was time to add an internal 3.5-inch floppy drive to it. The manual states that it is possible to have either two low-profile 25mm floppies in the front or one half-height 32mm floppy.

Guess what Commodore have fitted as standard for df0:? A half-height 32mm floppy, so to add another you have to throw out df0: and fit low-profile drives.

My dealer told me no low-profile drives are available. As an alternative he suggested I could add another 3.5-inch floppy to the 5.25-inch bay. But I'd need an adaptor frame, which is also unavailable.

Commodore are good at the technical side of things, but useless at building and marketing Amigas that are required by users.

K J Gandy
Warrington

Time to buy an external drive then, I guess. Ho hum.

ONE OF THE BIGGEST IN THE WORLD

£25 WINNER

Future Publishing publish about ten computer magazines for all the major formats, from the Amiga to the Spectrum. Why don't Future Publishing set up their own bulletin board system? On it all PD software reviewed in the magazines could be made available. All of the different magazines could have question and answer sections. Examples of what could be achieved with each piece of software and hardware reviewed could be uploaded. For example, users could download samples from the latest sampling package or download screen grabs from Vidi-Amiga 12.

I think if a BBS like this was ever brought on-line it would be one of the biggest in the world; a lot of readers would buy modems because the BBS would be run by the same people who produce the best magazines in the world.

Martin James
Doncaster

It's an excellent idea, I must say. I'll mention it to my fellow editors. I do wonder, though, if the time is ripe for such a service – even of _our_ very technically literate readership, only a small fraction own modems.

Assign of the times

Mark Smiddy fearlessly continues his detailed examination of assigns, devices and volumes.

Devices, volumes and assignments may seem worlds apart but their relationship is almost symbiotic. Last month I discussed the heady topic of devices, covering the familiar virtual device known as the console and disks. This month though, I'll be introducing some lighter topics such as volumes and directory assignments.

You may recall that you can write a file to any device or read a file from it using **COPY**. This could be as simple as duplicating a file:

```
1>COPY FROM SYS:File TO RAM:
```

or, less obviously, using the console to display something:

```
1>COPY FROM SYS:File TO ☛
CON:0/0/320/200/File
```

In these examples we're copying from an assignment to a device. The assignment **SYS:** is automatically made to the root directory of the disk you booted the machine from and is only one of several made by the machine during startup. The following command is also valid:

```
1>COPY FROM SYS: TO RAM:
```

This reads everything from the source device and writes it to the destination. Because **SYS:** is an assignment to the root directory of the boot disk, any files residing in that directory are copied.

CAUTION WITH DELETE

Sub-directories are not copied unless the **ALL** switch is specified. This is directly equivalent to:

```
1>COPY FROM SYS:#? TO RAM:
```

However, it should be noted that the following two commands *do not* have the same effect.

```
1>DELETE RAM:
1>DELETE RAM:#?
```

In the first instance, AmigaDOS reports "RAM: is a device and cannot be deleted" but in the second case it behaves as you might imagine.

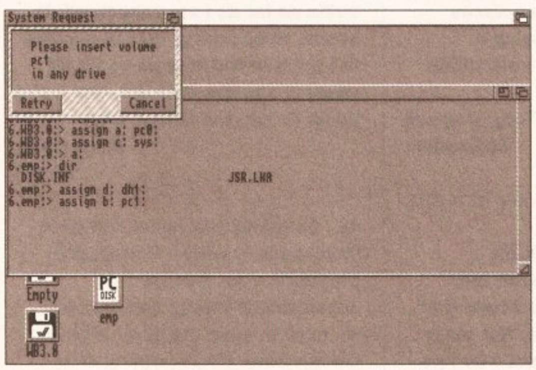
Before moving on, a couple of potentially nasty mistakes should be pointed out. Study these, but do not enter them:

```
1>COPY FROM SYS: TO RAM;
```

Note: the symbol ☛ in listings means *do not* type a return – the line is simply too long for our narrow columns

What will happen here? The semi-colon (;) is very easy to type when you really meant the full-colon (:) because the two are located on the same key cap. The semi-colon has a special meaning to AmigaDOS – it and anything following are ignored by the parser so the effect of this command would be to create a directory called **RAM** in the current directory and copy everything from **SYS** into that. Although such an effect is not disastrous, the next mistake might be and is just as easy to make:

```
1>DELETE RAM:A #?
```



You can use ASSIGN to create dummy PC disk names if you're so inclined – but watch out for the conflict with C: (PC hard drive and Amiga command directory!)

Up to AmigaDOS 1.3, this command line generates an error. After that though the multi-argument parser takes over and this is where the problem arises. This line is the same as entering two separate commands:

```
1>DELETE RAM:A
1>DELETE #?
```

and it is this second one which causes the problem – although it should need little explanation.

MORE ASSIGNS

For those less well versed in the ways of AmigaDOS, this line will delete any non-protected files in the current directory – wiping clean months of work if you're not careful about making backups. Be warned.

So what about volumes? On single drive Amigas we are all very familiar with those requesters stating, "Please insert volume 'XXXYYY' in any drive". How does AmigaDOS know which disk it actually requires? This is tied to another type of device-like feature – the logical directory assignment. Assignments are one way of giving a simple, easy-to-remember name to a directory somewhere in the directory hierarchy.

SYS:, as has already been discussed, is a short name "assigned" (given) to the root directory of the boot disk. Other assignments can be built from there or defined in their own right. For instance, the fonts can be located using an assignment called **FONTS:** (**SYS:Fonts**) and the device drivers by an assignment called **DEVS:** (**SYS:Devs**). By the same token, it is quite valid to have an external assignment made to a different disk (also known as a different "volume"). These facilities are controlled by the **ASSIGN** command. Let's skip the details for a moment and see it in action.

```
1>ASSIGN FONTS:
DF0:
```

This command assigns **FONTS:** (the place Amiga programs look for fonts) to the disk in drive **DF0:**. If you enter this command when **DF0:** is empty, the Amiga prompts: "No disk present in device DF0:"; otherwise the assignment is made to the disk currently located in the drive – provided it's a valid AmigaDOS disk.

Similarly, we can make an assignment to an AmigaDOS volume by replacing the device name with the disk's label (volume name), viz.:

```
1>ASSIGN FONTS: More_Fonts:
```

In this instance, if the volume is not currently mounted (inserted in some drive) AmigaDOS prompts: "Please insert volume More_Fonts in any drive".

In both cases, AmigaDOS assigns the logical directory assignment to the specified disk by its volume name – although the volume name is only defined in the second example. When an assignment is made to a device rather than a volume, the volume name is taken from the currently mounted disk. This method has the advantage of being smaller but is less useful because you must ensure the correct disk is in the specified drive.

PIPE BUG

In Workbench release 1.3.0 the pipe suffers with a minor, yet irritating bug. Unlike the rest of AmigaDOS, **PIPE:**'s filenames are case sensitive. In effect, this means that **PIPE:ABC** and **PIPE:abc** are two entirely different entities. The bug was fixed somewhere around release 1.3.2 but it's one to be aware of.

DIRECTORY DIRECTIONS

ASSIGN can, of course, be used to access more than just the root directory of any volume. If you wanted to access a sub-directory some way down in the hierarchy you only have to specify the path. This could be used thus:

```
1>ASSIGN FONTS: DF0:Deeper/Down
1>ASSIGN FONTS: ☛
MORE_FONTS:Deeper/Down
```

Once the assignment has been created you can use it just as you would access any other drive or device. You can even build assignments on top of one another like this:

```
1>ASSIGN SYS: DF0:
1>ASSIGN DEVS: SYS:Devs
1>ASSIGN PRINTERS: DEVS:Printers
1>ASSIGN EPSON: PRINTERS:Epson
```

The last example could be entered directly and is equivalent to:

```
1>ASSIGN EPSON: DF0:Devs/☛
Printers/Epson
```

AmigaDOS versions 2 and higher have two extra features which make much better use of external assignments. Typically, these are most useful in either of two instances:

- The assignment is only occasionally required.
- The assigned directory contains a large amount of information.

When any directory assignment is created it is said to be "bound" (tied,

if you like) to the path by something called a lock. (This is one of those places where the analogies get a little mixed up.) The two new options create a "late-binding" and "non-binding" assignment. When either of these assignments is created, AmigaDOS does not look for the path immediately, rather it waits until something attempts to use it.

Let's see those in action. We'll need to make a couple of commands resident (in RAM) to avoid any confusion, so enter this:

```
1>RESIDENT C:ASSIGN
1>RESIDENT C:DIR
```

Now remove any disk you have in the internal drive and enter this:

```
1>ASSIGN TEST: DF0:
```

AmigaDOS will present a request telling you there is no disk in the internal drive; cancel it and make a note of the error; do not replace any disks just yet. Now enter this:

```
1>ASSIGN TEST: DF0: DEFER
```

Notice how this time AmigaDOS does not present a requester asking for a disk? This is a late-binding assignment and will not be locked until something asks for it. Let's check that:

```
1>ASSIGN TEST: EXISTS
TEST  <DF0:>
```

Notice how the assignment is surrounded by angled brackets. This shows the assignment **TEST** has been deferred. We can ask for it in a number of ways – here's just one:

```
1>DIR TEST:
```

AmigaDOS will present a requester stating there is no disk in drive **DF0:** – just as it did before. You can make this go away by inserting a formatted disk – your Workbench disk will do. Now check to see what's happened like this:

```
1>ASSIGN TEST: EXISTS
TEST Workbench2.0:
```

Notice how the assignment has taken on the name of the volume used? In this case it was **Workbench2.0** but it will probably be different on your machine. The assignment is now said to be bound to that volume and will always request that disk when accessed. You can see this for yourself by removing the disk and entering this:

```
1>DIR TEST:
```

IT'S NOT A BIND

So what about "non-binding" assignments? Remove your Workbench disk and enter this:

```
1>ASSIGN TEST2: DF0: PATH
1>ASSIGN TEST2: EXISTS
TEST2 [DF0:]
```

You can see this time the assignment is surrounded by square brackets. Now compare what happens when you read the assignment with **DIR:**

```
1>DIR TEST2:
1>ASSIGN TEST2: EXISTS
TEST2 [DF0:]
```

The assignment does not change! In other words it does not become "bound" to any particular disk √ anything will do. This is particularly useful for applications which access large amounts of similar information at different times. The **FONTS:** assignment is a good target for this treatment – but remember, **FONTS:** must be available on the boot disk or the machine may not be able to access fonts used by Workbench.

PC TRICKERY

If you use PCs at all, you can use this technique to simulate MS-DOS (after a fashion) like this.

```
1>ASSIGN A: DF0:
PATH
1>ASSIGN B: DF1: PATH
```

(Users with an external drive on an A2000/3000/4000 should use **DF2:** instead of **DF1:**). The internal drive is now available like this:

```
1>A:
```

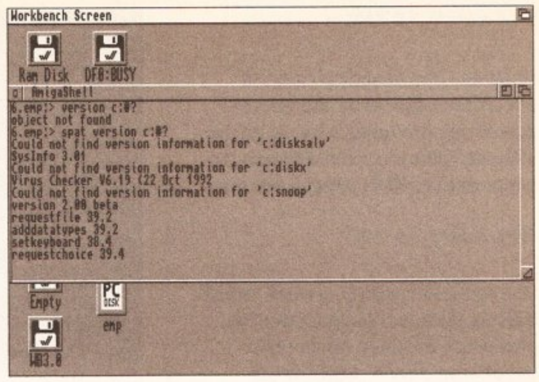
Moreover, all the other normal disk device calls work like an MS-DOS/AmigaDOS hybrid. For instance the following are now valid:

```
1>MAKEDIR A:NewDir
1>DIR A:
1>CD A:NewDir
```

If you have a hard disk with two partitions, you can also add these:

```
1>ASSIGN D: SYS: PATH
1>ASSIGN E: DH1: PATH
```

These definitions are included for their curio value more than usefulness – but you may find it handy to add them to the Shell-startup file. Don't use **C:** (the usual PC hard disk) because it clashes with the existing **C:** command assignment!



The SPAT command, which adds pattern matching to other commands, has a variety of applications, and even finds a use with Release 3's VERSION command

This technique is, perhaps, more useful to users with a PC file transfer system such as *MessyDOS* or *MultiDOS*. Users with *MultiDOS* should enter these definitions. It is not necessary to use **PCMOUNTALL** first:

```
1>ASSIGN A: MD0: PATH
1>ASSIGN B: MD1: PATH
```

If you are using *CrossDOS* (Workbench 3) you can access the PC drives in this way (use of the **PATH** switch ensures you can do this even when *CrossDOS* is not active):

```
1>ASSIGN A: PC0: PATH
1>ASSIGN B: PC1: PATH
```

It is possible to do such a modification directly via the mountlist (DOSDriver) if you really want to, but this should be avoided in case some other program wants to access the device.

OTHER DEVICES

AmigaDOS provides full command access to the hardware ports for the serial device and the printer, although they are not commonly used. In each case, two separate devices are available and each has its foibles. A printer, for example, can be connected to either the serial or the parallel ports – so in order to ensure output always goes to the right place, AmigaDOS can write directly to the filtered printer device, **PRT:**. Rather than using a dummy filename, I'll use a script (called *SPAT*) already on Workbench 1.3 and above. You don't have to understand what it does – it's only being used here as a convenient text file. For instance:

```
COPY S:Spat to PRT:
```

This device follows the settings exactly as defined by the Preferences settings – therefore if you have NLQ elite pitch set, then that is what will appear. This will probably override the settings on the printer – so you can send the text unmolested as shown on the next page:

WHAT IS SPAT?

SPAT is a command modifier, adding single pattern matching to commands which lack the facility. It is actually an AmigaDOS script, and was introduced with release 1.3 and is slowly looking more redundant as the system progresses to later and better versions. Confused? You won't be.

Take **VERSION** for instance. This is a command to read the version information from various AmigaDOS libraries and latterly, commands too. Basically the syntax of this command is:

```
VERSION "name"
```

so, you could get the version information or a known library by entering this:

```
1>VERSION LIBS:branch.library
```

But what if you wanted to get a list of version numbers of all the commands in the **C** directory (added in AmigaDOS 2). The obvious method is to use a global pattern just like you might use with **COPY**, like so:

```
1>VERSION C:#?
```

It doesn't work, because AmigaDOS does not have pattern matching built into the command. It is in situations like this where **SPAT** comes to the rescue. All you have to do is re-type the line with **SPAT** as the command and the original command as its arguments and presto. The previous command would become, therefore:

```
1>SPAT VERSION C:#?
```

The price you pay for this added convenience is a performance reduction. **SPAT** is script-based anyway, but it uses an extended version of the **LIST** command and can write rather involved scripts itself. Try dissecting it yourself but don't worry if it all seems Greek: one day it'll be as easy as reading *The Sun* newspaper.

```
COPY S:Spat to PAR:
```

However, this assumes that the printer is available on the parallel port. If you are using a serial printer instead, then you must address the serial device, **SER:** directly like this:

```
COPY S:Spat to SER:
```

Like most AmigaDOS devices though, **SER:** is buffered. AmigaDOS also provides a uniquely clever little unbuffered device, **AUX:**, which opens a window over the serial port. All you have to do is connect a suitable terminal to the serial port – it could be another Amiga or just about anything else provided it has suitable software. Once that's done just enter this:

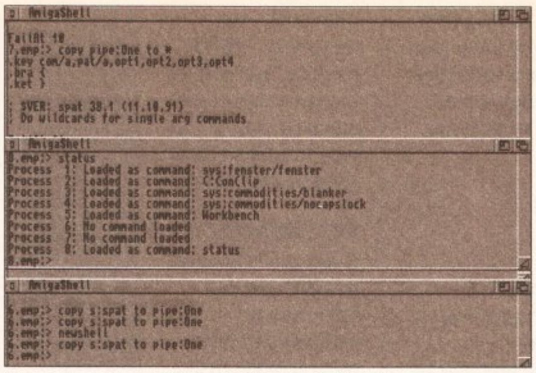
```
1>NEWSHELL AUX:
```

and you will be able to control the Amiga by remote control as it were. I have already covered this in some detail earlier in the series (see issues 7 – 9: see page 108 if you don't have these), so I'll leave you to experiment with it for now.

PIPING

In this discussion of devices and so on, it has been assumed everything works in terms of files: a complete binary story. However, one Amiga device deals specifically with bits of files: the pipe.

Basically, the pipe is a neat way of passing information between two Shells without having to fiddle around with a temporary file. AmigaDOS sees a pipe as a file of unlimited length. Provided something keeps reading the destination, you can feed the source until the cows come home, get milked and are finally converted into nice juicy steaks. The price you pay is 2K of RAM for every "open" pipe — hardly noticeable in a machine with at least 512K of memory. Pipes are not some universal panacea of course, just a means to an end.



Pipes can be used to send information from one multitasking process to another without needing temporary files; but STATUS, which lists running processes, can give confusing results – look at process 7 which has just completed a COPY

It is possible to use a pipe within a single Shell (by launching two processes) but it is more appropriate to use two completely different Shells. For the sake of this example you should start another Shell process using **NEWSHELL** and position it so you can see both windows on the screen. The actual Shell process number will vary from machine to machine, so for these examples the "1>" prompt refers to one of the Shells and the "2>" prompt to the other one.

Before you can use pipes, you must first make sure the device is available. Mounting it doesn't take much RAM and it's handy to have. If you are using Workbench 3, you should locate **PIPE**'s icon in the **DEVS/DOSDrivers** drawer of your Storage disk and drag it into the same place on the Workbench disk. Now re-boot the machine to make the pipe available. Users with earlier systems should explicitly mount the pipe like this:

```
1>MOUNT PIPE:
```

Like most devices you can read from and write to a pipe with **COPY** but there are some special considerations you must be aware of, not least that 2K automatic buffer space. To keep things simple in the beginning, we'll write a short file – the **SPAT** script is a useful one to start with:

```
1>COPY FROM S:SPAT TO PIPE:One
1>
```

[switch to the other shell:]

```
2>COPY FROM S:SPAT TO PIPE:Two
2>
```

What has happened here? Apparently very little – the **SPAT** script has vanished into the pipe and AmigaDOS is waiting for the next instruction. Now enter this:

```
2>COPY FROM PIPE:One TO *
```

[switch back again:]

```
1>COPY FROM PIPE:Two TO *
```

The contents of the pipe (a text listing) appear on the screen. Now, that might not look like a big deal — exactly the same effect could be gained by writing the file to the RAM disk, couldn't it? Try it. From now on, watch out for the prompts to make sure you're using the correct Shell process:

```
1>COPY FROM S:SPAT TO RAM:One
2>COPY FROM S:SPAT TO RAM:Two
2>COPY FROM RAM:One TO *
1>COPY FROM RAM:Two TO *
```

The same thing has happened, so what has changed? Look in the RAM disk...

```
1>DIR RAM: FILES
```

The two files labelled **One** and **Two** are consuming memory, albeit a very small amount. Where are the pipes then? A pipe is deleted as soon as the sending process closes the input – source end – and the output process has read all the information from the destination. A pipe, therefore, is an ideal place for automatic, short-term storage – although it very rarely gets used for that purpose, primarily because the "file" can only be read once.

A more useful function of a pipe is to pass information between two Shells. Here is a typical example where a file would probably suffice:

```
1>TYPE >PIPE:dump C:DIR HEX
```

After a few seconds, the type command freezes in mid-stream. This has happened because the pipe is full and there is nothing connected to the output. This can easily be fixed by connecting something to the destination end:

```
2>TYPE PIPE:dump
```

Watch carefully. You should be able to see how the command in Shell process "1" finishes before Shell process "2". (Remember, these numbers may be different in your case.)

If the two Shells are running asynchronously, from two separate scripts for instance, the second command will fail if the first had not completed writing the file. This becomes more apparent when we try something like this:

```
2>TYPE RAM:Dump
TYPE can't open RAM:Dump
Object not found
```

AmigaDOS cannot find the file because it does not yet exist in the device. Let's see what happens when the same example is adapted to use the pipe:

```
2>TYPE PIPE:Dump
```

Rather than produce an error, AmigaDOS waits for something to happen. This is because the pipe device creates an open file for it to get hold of. It will maintain that stalemate position until the pipe receives some input. Now enter the following:

```
1>COPY S:SPAT TO PIPE:D
```

What happens to the pipe in the receiving process – Shell 2 in this case? Nothing, because the piped source file was called **D**. Open a third Shell and enter this:

```
3>COPY S:SPAT TO PIPE:Dump
1>TYPE PIPE:D
```

This clears everything up by sending something to the source end of **PIPE:Dump**. The TYPE command empties the destination end of **PIPE:D**. That may sound a little hairy, but when you see it all in action and try it out for yourself, you'll get the gist in a jiffy. AS

JARGON BUSTING

***:** AmigaDOS pseudonym for the current console window. A device can perform any Input/Output operation on "*".

Close: To relinquish access to an open file. See Open.

Device: An amigaDOS daemon (small, automated program) handling the interchange of files between the system and the hardware.

File: A uniquely labelled collection of zero or more bytes stored on – or used by – a device.

I/O: A short form of Input/Output. Usually used in conjunction with port: "the machine has several, multi-purpose I/O ports."

Mount: This term is used when a device is made available to the system explicitly using the **MOUNT** command. It may also be used (interchangeably) to refer to a disk being inserted in a drive. A device is said to be "mounted" when it is available for reading or writing, hence a disk must be inserted in a drive before it the drive is properly mounted.

Open: To gain access to a file for reading (getting information) or writing (sending information). Only one process can have write access to a file at any time, but there is no limit to the number which can be reading from it.

GASTEINER

SUMMER SALE

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GIGAMEM
£69.00

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Features:
- Support up 1 GigabyteVirtual Memory
- Swapping to either a file or a partition
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- Comfortable preferences utility with 2.0 style
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- Display of available virtual memory on the Workbench title
- Write cache for increased speed
- Ready-to-use program database of common applications for optimum utilization

System requirements:
- GigaMem works with all AMIGA <R> computers with MMU (Memory Management Unit); i.e. Amiga<R> 2500, 2500/30, 3000 or Amiga 500(+)/1000/1500./2000/4000 with 68020 or 68030 accelerator and MMU
- No restriction on type of HD controller and hard disk
- GigaMem is compatible to Kickstart 1.2/1.3 and 2.x

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Window SHOPPER

Roll up, roll up! We've got hardware! We've got software! We've got books and we've got... um, well, fish – all on review this month!

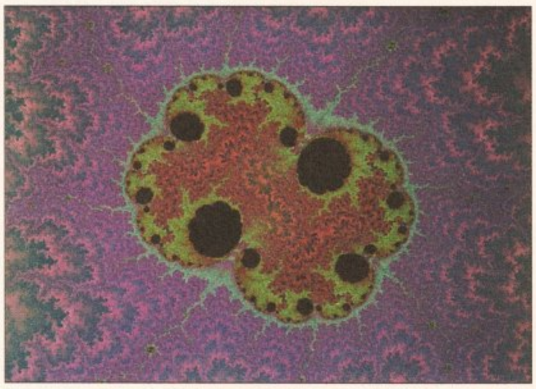
FRACTAL PRO v6.01

From: MegageM
☎ 0101 805 349 1104
Price: $209.95
(including postage in the UK)

The latest release of MegageM's *FractalPro* package offers you the chance to use the power of the Amiga's graphics to explore the weird and wonderful world of fractal images. Since it first hit the streets in 1991, *FractalPro* has evolved into a very powerful fractal generating and animating package.

Now, calculating fractals is an operation that consumes a great deal of processor time – there's lots of serious number-crunching to be done. The reason is that fractals are based on iterative functions – for each point in the image you have to troll round and round a loop evaluating the function each time and waiting to see if the point remains within set bounds or grows towards infinity. The number of iterations you perform for each point – that is, the number of times you go round the loop – determines the "depth" of the fractal image at that particular point.

Unfortunately having all of this brain-taxing maths to perform means that *FractalPro* will only run on machines kitted out with either a 68040 processor or a maths co-processor (either the 68881 or 68882). It will however also run quite happily on many systems that have been upgraded with third-party accelerators. *FractalPro* also requires the machine to be running Workbench 2.0 or higher and to have at least 1Mb of RAM, although if you want to turn out high-resolution images you'll need to have at least 4Mb of RAM installed.



Just one example of the impressive fractal images that you can create using MegageM's FractalPro.

If you're not a mathematician, don't be put off by all of this talk about iterative functions – you certainly don't need to have any deep understanding of the mathematics that underlie Chaos theory (of which fractals form just a part) to be able to create stunning images on your own Amiga.

FractalPro is a high-specification package. It comes equipped with all the tools you need to delve deeply into the Mandelbrot or Julia set. The user interface is based on two "click button" control panels. You encounter the first of these only on starting the program and use it to select the required display mode. The main control panel offers a wide range of features. You can set the "depth" of the fractal – that is, the number of iterations performed to calculate each point. You have eight options, from 64 iterations per point through to 16,384. Remember, the more iterations, the more detail will appear in the image, but at the expense of much greater processing time. Running on a 4000/040 we found that an average calculating time for an image was four minutes – that's performing 8,192 iterations per point.

Once you've calculated an initial image – or loaded one you've generated previously, or used one of the examples supplied – this can be modified or used as a base for calculating subsequent images. The control panel contains a series of zoom buttons that enable you magnify an area of the current image – and *demagnify* it, as it's rather inelegantly described in the manual. Controls are also provided for recolouring images. Clicking on the palette editor brings up a slider control panel with which you can alter the balance of the colours in the image.

You can also use *FractalPro* for producing animations, recording successive images of nearby points within the Mandelbrot or Julia sets and then replaying them to give a moving sequence. If you followed *Amiga Shopper's* recent series on Chaos, you'll remember that we used a similar process to animate eight frames from the Julia set in *AS* 27. (You can order that issue on page 108 if you missed it.)

Amiga Shopper Verdict: A versatile and full-featured professional package. The documentation though is a little terse and not what you'd expect to accompany a $200 piece of software. Before you consider buying *FractalPro* you should check out the wide range of PD programs around that also enable you to generate fractal images.

AMIGA VIDEOS

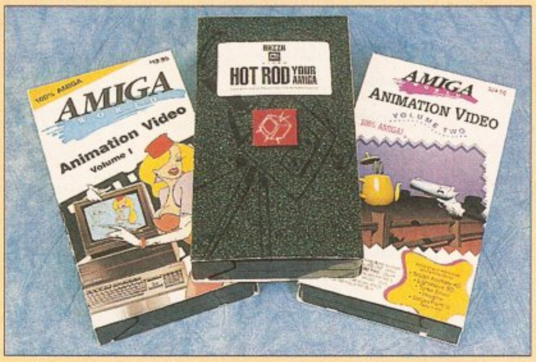
Hot Rod your Amiga
Price: £10.99
Animation Vol 1
Price: £10.99
Animation Vol 2
Price: £14.99
All from: Burgess Video Group
☎ 0874 611633

The Burgess Video Group are currently distributing 21 different videos dealing with aspects of the Amiga, and we took a look at the *History of the Amiga* video in Window Shopper last month. Now we're going to spool though another three.

Hot Rod your Amiga runs for 50 minutes and deals with the different expansion options open to the power-hungry Amiga owner. It's designed to appeal to the absolute novice – things like the names and functions of the different expansion ports are all clearly explained – and you come away from watching this video with a good, if a little superficial, overview of the types of add-ons available – everything from accelerator cards to hard drives.

Unfortunately, *Hot Rod your Amiga* isn't the most up-to-date of videos – it carries a copyright notice from 1989 – which means that you'd be most unwise to base your upgrade decisions on the information contained therein.

Animation Vol I and *Animation Vol II* are more rewarding. You won't be shocked to learn that they consider the stunning professional-quality results that can be produced by deploying the power of the Amiga's custom graphics chips. Like *Hot Rod your Amiga,* both of these videos aren't new – they date from 1989 and 1990 respectively – but in this case the passage of time hasn't seriously downgraded their value.



You probably won't find them at your local video shop, but these titles are tailor-made for Amiga enthusiasts.

These aren't tutorial packages; at the end of the day all you get is a collection of animations that have been garnered from a range of the leading Amiga animators. That's by no means a criticism of these tapes – many of the animated sequences that they contain will prove inspirational to potential Amiga artists as well as just purely impressive to us lesser mortals who enjoy watching what our machine can do at its best.

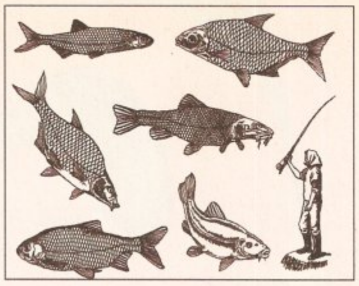
Amiga Shopper Verdict: Both of the animation titles are effective demonstrations of the Amiga's versatile graphics ability. If you want to be inspired by the work of top animators, then these are for you. *Hot Rod your Amiga* however is a now badly dated production which will be of little help to you in making an informed upgrade decision.

CLIP ART COLLECTIONS

Signs & Symbols 3
Fishing & Freshwater life
From: Artworks
☎ 0469 588138
Price: £6.99 per package

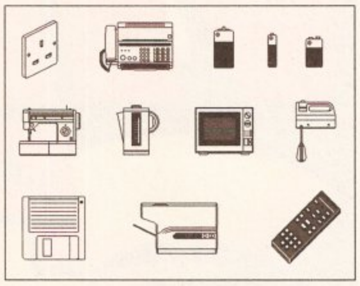
Clip art is an ideal way to get hold of high-quality pictures to enhance your own documents or screen designs. Video users will also find these collections of clip art a boon – there are many images that will come in useful for titling purposes.

Of course, to be able to incorporate these designs in your own work you'll need an appropriate package with which to handle them – typically a painting program such as *Deluxe Paint.* If you're familiar with the *DPaint* package then you'll be aware that you can use clip art images as "brushes".



Professor Trug had quite remarkable control over his formidable creations.

The *Signs & Symbols 3* package from Artworks contains about 160 images covering a very diverse range of subjects – you'll find balloons and aircraft; household appliances; sports equipment; a variety of maps of countries and continents; Access and Visa symbols; hats, including a Viking helmet and a judge's wig; speech bubbles; pound, dollar and cent symbols; fruit and vegetables; there's even a picture of a menorah – that's a seven-branched Jewish candelabra. It's all crammed on a single disk, and all the pictures come as high-quality, monochrome, IFF, bit-mapped, hi-res images.



Electric socket, microwave oven, cuddly toy – didn't they do well?

Also from Artworks comes the *Fishing and Freshwater Life* clip art collection. As you might imagine, there are lots of pictures of fish. Also included though are a selection of water-living creepy-crawlies and a number of pictures of fishing tackle and anglers in action. As with the previous collection, all are high-quality black and white line drawings.

There is one criticism that we can level at this collection: none of the pictures is named. So while plenty of different fish are included, if you're after a particular flavour then you may well need to employ the services of a marine biologist if you aren't familiar with the differences between the hake and the halibut or the guppy and the gudgeon.

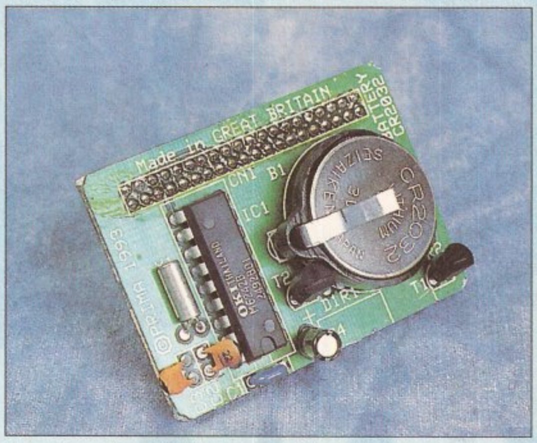
Amiga Shopper Verdict: If you've got a use for clip art, then you should check out Artworks range. At a cost of £6.99 for a diskful, you're only paying about 4p for each image – now that's a bargain.

A1200 PRIMA REAL-TIME CLOCK

From: First Computer Centre
☎ 0532 319444
Price: £17.99

A1200 owners will be pleased to hear that First Computer Centre in Leeds have just released a real-time clock for the machine. Known as the Prima clock module, it plugs directly into the A1200's circuit board and is simplicity itself to install. It is important though to be aware that you have to open up the A1200 to fit the clock module, which means that you will unfortunately invalidate the Commodore on-site warranty.

The Prima clock is supplied with full installation instructions. These occupy just one side of a sheet of A5 – but don't worry, this is more than adequate. It's basically a five-step process: first you disconnect the power leads, then remove the five screws holding the case together and separate the two halves. Now you have to lift the keyboard assembly out carefully, then remove the panel of RF shielding next to the disk drive – this helps protect the circuit board from extraneous electrical signals. Under this is the 40-pin connector that the Prima board plugs into. Reassemble the machine and the job's done.



If you've always felt that a real-time clock was the one thing your A1200 lacked... your life is now complete.

Obviously you have to set the clock before it can be used, but again this is a very simple process requiring just three Shell commands – and again instructions are supplied with the module. The clock is supplied with a battery which, according to First Computer Centre, should have about a two-year working life.

Okay, so once you've invested your £17.99 to obtain a Prima real-time clock, what use is it? Well, for a start it will mean that in future all your files will be stored with a correct time and date code. This can prove very useful when you're trying to track down a previous working version of a particular file. The clock will also prove to be invaluable if you want to run any sort of diary or appointment scheduler – like the *Pest* appointment scheduler that our resident AmigaDOS guru Mark Smiddy has been expounding over the past few months.

Amiga Shopper Verdict: At £17.99 the Prima clock module represents excellent value for money.

A GUIDE TO DESKTOP PUBLISHING

Author: Terry Freedman
ISBN: 07457 0039 X
Publisher: Kuma Computers Ltd
☎ 0734 844335
Price: £12.95 (paperback)

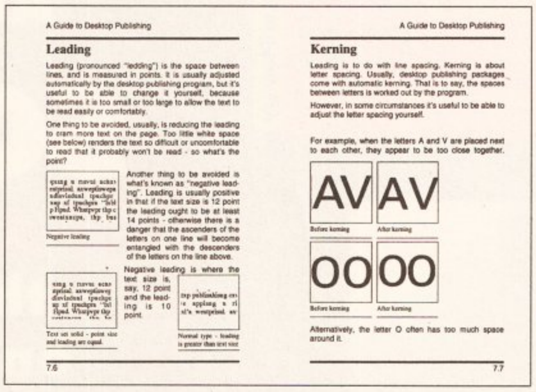
There are lots of books available on the subject of desktop publishing. Most of them are product-specific – books on *Pagemaker* for the PC, for example, or *Quark XPress* for the Mac – but many others are simply about desktop publishing in general. Even if they are slightly biased toward the PC or Mac, an Amiga user can still learn from them.

Terry Freedman's *A Guide to Desktop Publishing* is an example of this genre, but unlike most others, at £12.95 it is fairly cheap as books on computing go.

Possibly the strangest aspect of this book is that all the example screenshots in it are of "cheap" Atari ST and PC DTP programs. The book itself was desktop-published on a PC using *Timeworks Publisher 2,* and this probably accounts for its amateurish look, along with the fact that the pages were obviously laid out by an inexperienced page designer. If you want to saw a piece of wood in half you don't buy a spanner and ask an astronomer to do the job for you – well, not if you want it done properly, at least.

I have to be frank and admit that page 3.6 was as far as I was prepared to actually read of this book – about one quarter of the way through. By this time I had come across so many grammatical and punctuation errors, and had my eyes assaulted by so many poorly designed pages, that nothing in the last three-quarters of the book could have saved it from the bin.

There's so much wrong with this book, from the 12-point Helvetica typeface chosen for the main body text – which is too large for the width of the pages, so comes across as very "Janet and John" – to the overuse of rules and bullets and running text in narrow columns around screenshots, all of which tends to distract you from the job of reading the book, to the inconsistent style for subheadings... I could go on for quite a long time, but I won't bore you with the details.



A Guide to Desktop Publishing

Leading

Leading (pronounced "ledding") is the space between lines, and is measured in points. It is usually adjusted automatically by the desktop publishing program, but it's useful to be able to change it yourself, because sometimes it is too small or too large to allow the text to be read easily or comfortably.

One thing to be avoided, usually, is reducing the leading to cram more text on the page. Too little white space (see below) renders the text so difficult or uncomfortable to read that it probably won't be read - so what's the point?

Negative leading

Another thing to be avoided is what's known as "negative leading". Leading is usually positive in that if the text size is 12 point the leading ought to be at least 14 points - otherwise there is a danger that the ascenders of the letters on one line will become entangled with the descenders of the letters on the line above.

Negative leading is where the text size is, say, 12 point and the leading is 10 point.

Text set solid - point size and leading are equal.

Normal type - leading is greater than text size

7.6

A Guide to Desktop Publishing

Kerning

Leading is to do with line spacing. Kerning is about letter spacing. Usually, desktop publishing packages come with automatic kerning. That is to say, the spaces between letters is worked out by the program.

However, in some circumstances it's useful to be able to adjust the letter spacing yourself.

For example, when the letters A and V are placed next to each other, they appear to be too close together.

AV AV

Before kerning After kerning

OO OO

Before kerning After kerning

Alternatively, the letter O often has too much space around it.

7.7

Many of the pages in this Guide to Desktop Publishing are themselves a good example of how not to do it.

Amiga Shopper Verdict: If this book about desktop publishing, which has itself been desktop-published, contains so many grammatical and design faults, how on earth are we supposed to take seriously any of the advice it contains? It's the blind leading the blind. ***Jeff Walker***

special 50th anniversary issue of the

THE WORLD'S BEST-SELLING AMIGA MAGA[...]

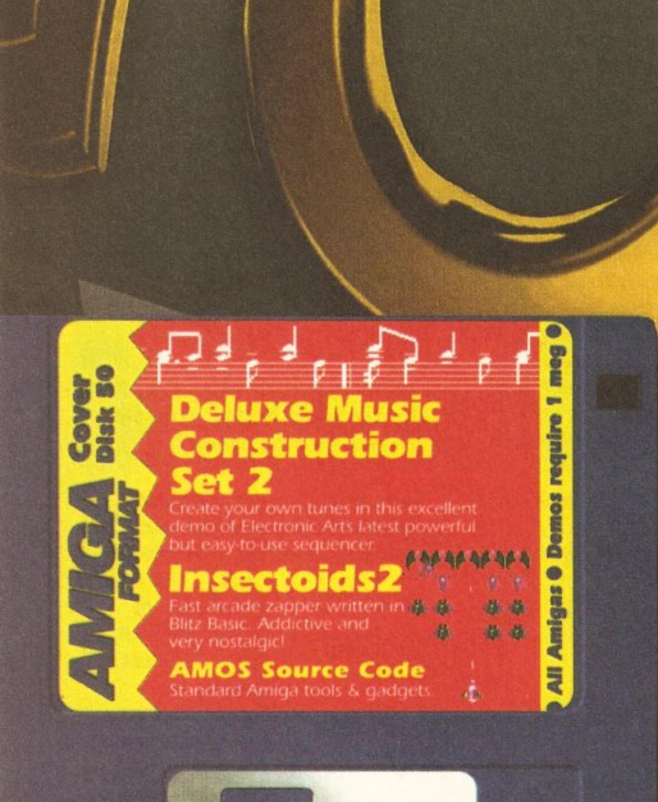
AMIGA FORMAT

ISSUE 50 ■ SEPTEMBER 1993 ■ £3.25

ON SALE Thursday 22 July

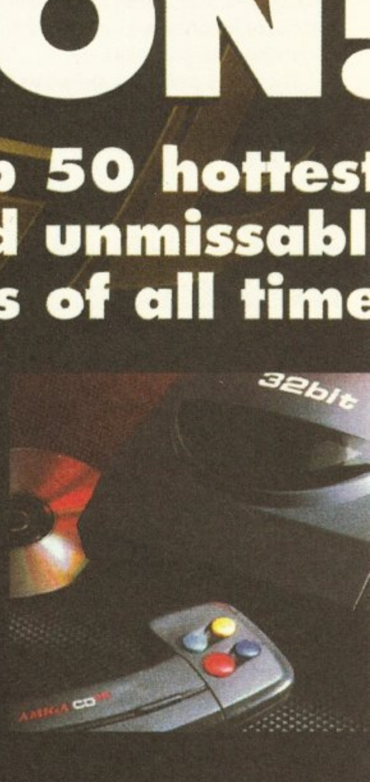
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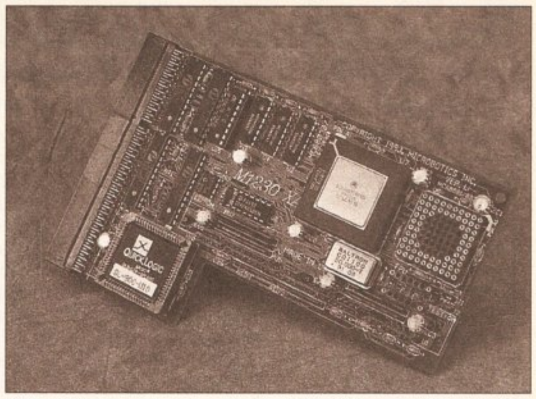
ON TEST
A1200 RAM expansion cards

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Speed thrills

Toby Simpson tests the latest accelerator for the Amiga 1200, Microbotics' M1230XA.



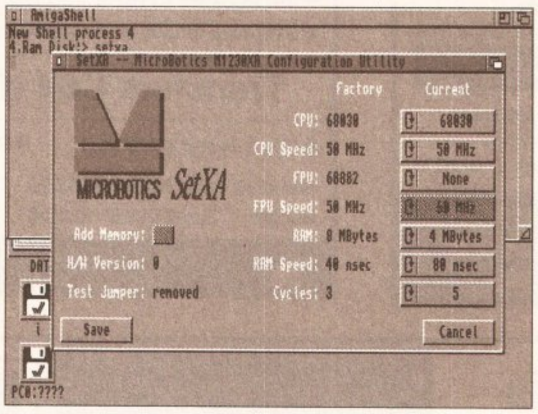
This little board slots comfortably into your A1200 via the trapdoor and speeds it up at least fourfold.

The Amiga 1200 arrived just six months or so ago, and boasts a 14MHz 68020 processor as standard. But if you already lust for more speed, you don't have to trade in your machine before it's even out of warranty: there are now several accelerator boards you can fit to it. The latest are the M1230 XA range from Microbotics.

The version tested came complete with a 50MHz 68030 chip with MMU, and no FPU. 4Mb of Fast RAM was fitted, and the board comes with a real-time clock. An FPU (the 68882 or 68881 chip) at any speed up to 60MHz can be installed. Up to 128Mb of RAM can be fitted in a single SIMM module. The RAM speed is configurable from 100ns to 40ns. 70ns RAM was supplied with the review board. Documentation consists of two double-sided A4 sheets of paper, including a diagram of the board with the location of each component part indicated.

Fitting is very simple indeed. The only thing that fooled us was two jumpers on the board. One of them, the test jumper, came set even though the documentation said it wouldn't be. So no sooner had we installed it than we had to take it out again! But this really is very easy. The card fits into the trapdoor on the bottom of the A1200, so fitting it will not invalidate your warranty.

Unless you're lucky enough to be running a Workbench later than 3.0 (not very likely, really), the memory on the M1230 isn't automatically recognised, so a little tool utility is supplied which you drop into your **WBStartup** drawer to make it appear. If you upgrade your operating system in the future this won't be necessary.



The configuration utility SetXA in use – comprehensive and very well presented too, it has to be said.

A nice touch is that Microbotics have avoided loads of jumpers and instead used non-volatile memory (which keeps its contents even when re-set) to store your configuration. This means that you are able to change characteristics of your M1230 board from the comfort of your own CLI, with the aid of the *SetXA* utility – the type of FPU you have, what sort of memory and how much of it you have got installed, and so on. Normally you won't need to play with this utility unless you change something, like adding an FPU for example, and it is quite possible to get into a real muddle, because you can actually configure such things as the speed of memory. Beginners might find this a little daunting.

The real-time clock is a nice addition to the A1200. (The machine really ought to have one as standard, but that's a different moan altogether!) With this installed, all files on your disks are stamped with the time they were created.

SPEED TESTS

In theory, an A1200 with this board installed should be exactly twice as fast as an A4000/030, which it pretty much is. In average use, we found that an A1200 with this board installed was about four to four and a half times faster than a normal A1200. Some of this speed increase is due to the addition of fast memory, and this would have been greater still if we had had faster RAM, rather than the 70ns supplied.

We ran a series of tests using *AIBB (Amiga Intuition-Based Benchmark;* available from all good PD libraries and reviewed in detail in *Amiga Shopper* 25 – if you missed that, turn to page 108). We tried a selection of integer math tests and a couple of floating point math tests. These are the results: IMath: 3.94 times faster than A1200; Matrix: 4.73 times faster; Sieve: 4.34 times faster; FMath: 3.97 times faster – an average of 4.24 times faster than an A1200, or about seven to eight times faster than an A600. If it had had the FPU installed, this figure would have been much greater.

As far as general reliability goes, the M1230XA is faultless, and overall it is a very nice board – in my opinion better than the GVP A1230 we tested in the accelerators round-up in *Amiga Shopper* 27 (also still available from our back issues service on page 108). It has a faster CPU (with a memory management unit), and a real-time clock. It's worth considering just for the clock alone. It's easy to add an FPU later, and a nice touch is that the FPU does not have to be an expensive 50MHz one to match the CPU – a separate socket is provided for the crystal to the FPU, so you can buy a cheaper 25MHz one and use that if you wish. Well worth adding to your A1200. AS

JARGON BUSTING

CPU: Central Processing Unit. This is the microprocessor itself – in the M1230XA, the 68030 chip.

FPU: Floating Point Unit. A co-processor that dramatically speeds up mathematical calculations – especially useful if you do a lot of rendering, DTP, and art work.

MMU: Memory Management Unit. A little gadget built into 68030 chips (but not the 68EC030) – particularly handy for programming, because it enables you to run utilities such as *Enforcer* which trap illegal memory accesses and tell you where they were.

RTC: Real-Time Clock. Keeps the current time and date even if your Amiga is switched off, so as well as running those handy clock programs on your Workbench, it can stamp all your files with the times when they were created.

SIMM: Single In-Line Memory Module. Provides RAM chips on a plug-in card, making them much easier to upgrade than old-fashioned soldered chips.

SHOPPING LIST

M1230XA accelerator
With 40MHz EC '030 chip, 0Mb £299.99
With 50MHz '030 chip, MMU, 4Mb (as tested) ... £499.99
For other configurations, see the advert in this issue.
By: Microbotics Inc, Texas
From: Indi Direct Mail, 1 Ringway Industrial Estate, Eastern Avenue, Lichfield, Staffs. WS13 7SF.
☎ 0543 419999.

CHECKOUT M1230XA

Fitting ●●●●○
A straightforward plug-in trapdoor fitting.

Software ●●●●○
Comprehensive – but perhaps a little too much so for beginners.

Documentation ●●●○○
Skimpy, but sufficient.

Overall rating ●●●●○
Reliable and easy to expand later – even up to 128Mb at 40ns, and that's fast.

SOFTWARE for free

Ian Wrigley checks his ancestry, his biorhythms, the origin of the earth, even the right time, using low-cost or no-cost software.

Another month, another set of Fish disks. This time it's 861 to 870 – and, once again, many thanks to Anglia PD for supplying them as soon as they became available. PD Soft have been busy, too, and have sent us a number of their "collection" disks – each disk contains a large number of different utilities on a single theme, such as DTP. Also this month, another delve into the ever-increasing postbag of stuff sent in direct by PD houses and authors.

As the Fish disk output seems to be slowing down slightly, we appear to be getting more and more stuff sent in from other sources – which is, of course, rather nice to see. It's much better to get a program, and a note, from the original author than "anonymously" on a collection like the Fish disks. However, if you have written any PD or shareware, please let us know whether you want us to publish your home address as the source for people to obtain the software, or want readers to obtain it through normal outlets such as PD houses and BBSs.

Right, enough public service announcements – on we go…

BEGINNERS — BEGINNERS START HERE — BEGINNERS

What is PD?

PD is a general term which many people incorrectly use to refer to all freely-distributable software. In fact, PD (which stands for Public Domain) software or "freeware" is only one branch of this area; the other main one is shareware.

Essentially, freeware may be copied and used by anyone, although some authors place restrictions such as not allowing a PD library to charge more than a certain amount for the disk.

Shareware, on the other hand, should be treated more like commercial software. Although you are allowed to copy and pass around shareware programs, if you like one then you should pay the requested fee to the author – it's normally around £15 or less, and often entitles you to an upgraded version or a printed manual. Paying your shareware fees encourages software authors to write more programs – and if they don't, the Amiga scene will be a poorer place. Don't think that you're paying money for nothing, either – often hundreds or even thousands of hours of work have gone into creating a program, and it's only right that the programmer receives some reward for his or her work.

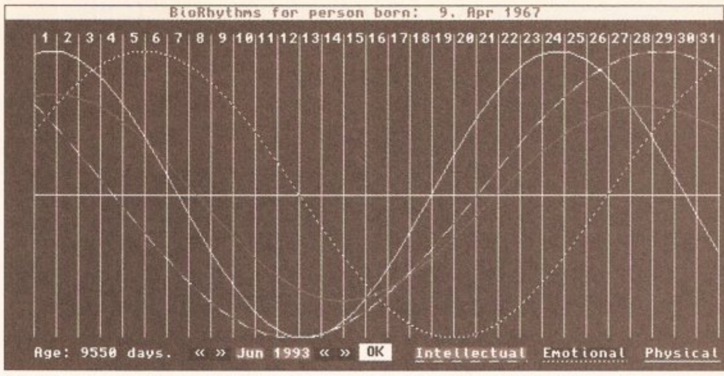
The third branch of software that we cover here is called licenseware. This is a form of shareware which is licensed to one (or more) PD libraries. In essence, when you buy a licenseware program you are buying shareware and paying the license fee at the same time. For this reason, you should treat any licenseware that you buy exactly as you would treat a piece of full-price commercial software – don't pass it around to your friends. You've only bought the right to use it yourself.

Can I pass other people copies?

Yes – that's the way that PD reaches a wider audience. Just make sure that you have followed the author's requirements for distribution. These are normally things like not charging more than a certain amount for the disk, not altering the program, or making sure that all the original documentation is included on the disk.

You can also pass on shareware – but not any registered copies of programs. If, when you pay your shareware fee, the author sends you an improved version of the program, then be careful not to give that out. Only pass on unregistered shareware.

You should not, of course, pass on licenseware – it should be treated in the same way as registered shareware.



BioRhythm, on Fish disk 861: hmm… if my intellectual and emotional curves were rising when I wrote this column, how come I'm knackered…?

BIORHYTHM

Fish disk 862

BioRhythm is a program to plot… ah, you don't need me to tell you. Anyway, as far as it goes, the program seems to do a fairly good job. Enter your birthdate and it will give you your age in days (although only, it seems at the beginning of the month that you're interested in plotting) and show graphs of your intellectual, emotional and physical biorhythms, along with an "average" curve, which is the sum of the three.

I have only one question, really: how come, even on plots of months like February and June, graphs for 31 days are shown? Hmm. At least now I know how I'd feel on February 31st next year if it existed…

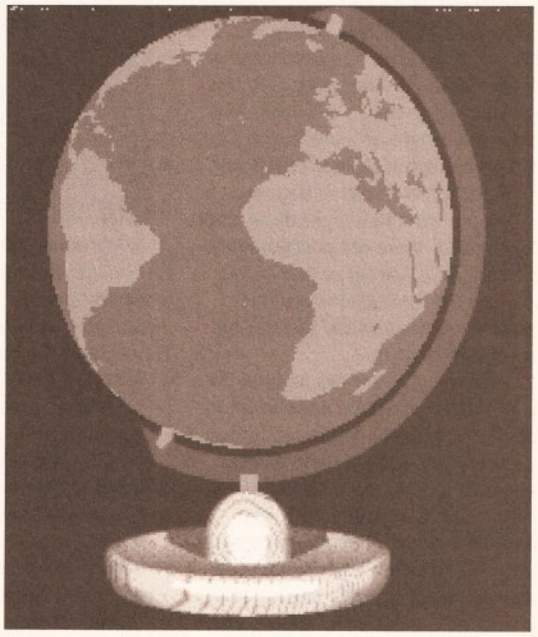
The author of this program claims that it's 400% faster than previous versions. I have to admit that if I actually had to wait for this kind of stuff to appear on the screen, I'd be rather peeved. As it is, it's a good laugh, I suppose – I always seem to feel the most tired when my physical curve is at its peak according to programs like this…. But it does the job, it's colourful, and all the Amiga-owning Crusties there are will love it, I'm sure.

Program rating 7/10

GLOBE ANIMATION

Fish disk 862

This is, quite simply, an animation of a spinning globe, with a black background. As such, it's pretty but doesn't exactly thrill. However, it's

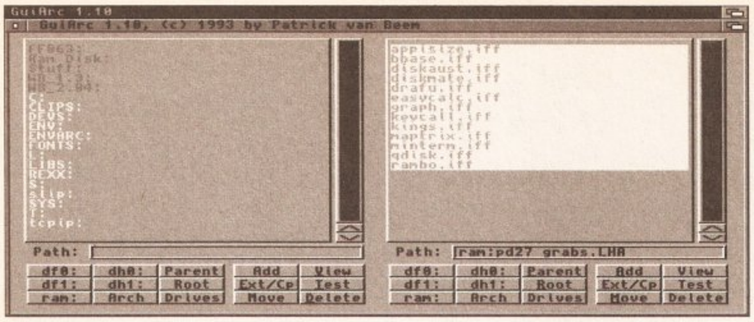


Globe animation: er… an animation of a globe!

RATING THE PROGRAMS

Just to be awkward, I rate the software that I review in two different ways, depending on what it is. Disk magazines, collections of clip art and the like are given a "value for money" rating, since you're essentially paying for one thing, or group of things, on the disk.

Single programs which appear in a collection of others, or programs which I've downloaded from bulletin boards, are given a "program rating", which reflects how good I think they are, taking into account usability, bug-proofness, my own particular (or should that be peculiar?) tastes and so on. Both ratings are out of a maximum possible 10.



GuiArc: on the right are the contents of an archive; on the left, you can choose which directory it should extract files to. Simple and effective.

worth getting for the playback program, *View 3.0*, a PD program by Michael Hartman. This is an IFF ILBM and ANIM viewer which can cope with standard ILBM images, *OpCode* 5 and 6 animations, DCTV pictures and animations and SHAM images. It works nicely, and for that can be recommended if you want to examine files in any of those formats.

Program rating 6/10

GUIARC

Fish disk 863

It only takes one programmer to discover an application area that's short of decent programs, it seems, and suddenly everyone's getting in on the act. At the moment, one such area is graphical interfaces for archiving programs. The program I tend to use is *All* (reviewed in *Amiga Shopper* 27), but now *GuiArc,* by Patrick van Beem, has also come on to the scene. It's freeware, and has the advantage that it is configurable to handle whatever archiver you want to use (though it already copes with *LhA,* and I can't think of a reason why you'd want to use anything else). As shipped, there are configurations for *LhA, Zoo, Ape* (what that?) and *Arc,* but the instructions are fairly clear if you want to add support for any other program.

Once you've got the hang of the user interface, *GuiArc* does seem to be pretty powerful. There are buttons available to add files to an archive and also to view the archive, test it, and extract and delete files. The program expects that you're going to use *LhA,* but if you specify that the archive you're creating has a name ending in, for instance, ".zoo", then *Zoo* will be used instead.

The main display is a two-window format; moving files into an archive (or creating a new one) is as simple as selecting the archive in one window, the files in the other and clicking **Add.** A new window appears to give the archiver's progress report, and after everything's finished you're taken back to the main screen.

GuiArc is a nice piece of programming, and its extendability means that a new release isn't required each time a new archiver is created. Certainly, if you have hassle remembering the arcane commands that most archiving utilities use, this is definitely worth checking out.

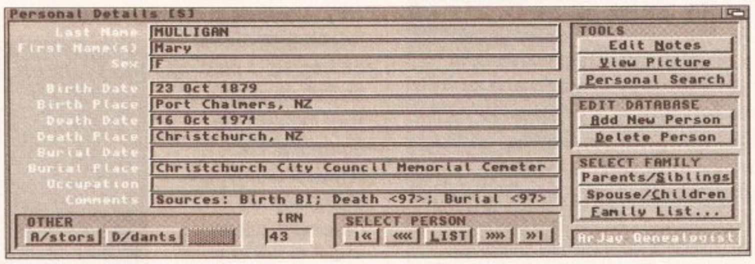
Program rating 9/10

TOBACK&FRONT

Fish disk 865

This is a neat little program which implements something that should have been in the operating system anyway. It's public domain, and was written by Stefan Sticht.

toBack&Front is a Commodity (requiring Workbench 2.04 or higher) which enables you to easily move windows to the front of the display from behind others, or move them to the back. For example, double-clicking on a partially-hidden window can force it to the front; triple-clicking can send it to the back.



ArJay: an impressive genealogy program, with a very friendly user interface.

The documentation is comprehensive, and details exactly how to customise the program to your own requirements – you can specify mouse clicks or mouse plus keyboard events, for example [left Alt key] plus a mouse-click to bring a window to the front. The defaults, though, are that double-clicking brings a window to the front, and clicking both mouse buttons at the same time sends it to the back – and many users will find no need to change these.

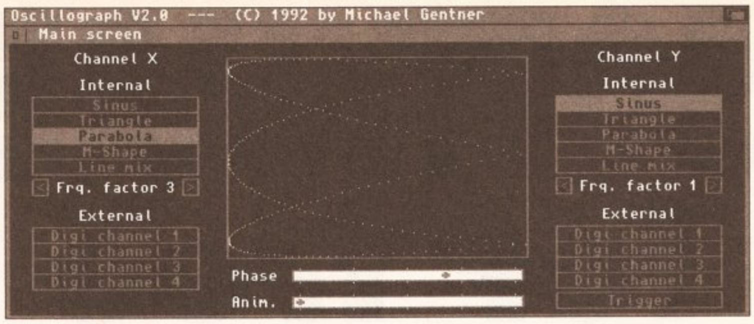
This is one utility that should be installed on every Amiga.

Program rating 10/10

ARJAY

Fish disk 865

This, according to author Robbie J Akins, is a genealogy program which is "totally non-sexist and secular", has no checking on sex (to allow for "unconventional" relationships) and has no name checking (to allow for adopted children). It supports the storage of up to 999 people per database, with a maximum of ten marriages and 40 children per family



Oscillograph: great for physics demonstrations... or just for playing around with! Look, here's one just like that snake doing the twist on that TV advert!

group – and if there are more than that, there's no way you'll have time to use your Amiga anyway!

This is a very professional-looking program; Akins has even licensed the *AmigaGuide* program from Commodore to provide on-line, context-sensitive hypertext help – something which I've never seen in a freeware program before.

Data entry is simple, thanks to a well laid out user interface. The best way to go about things is to enter basic data about people first, and to enter their relationships later – when all the principals and spouses (not "husbands and wives", because of the non-sexist nature of the program...) are in place. Notes can be entered using your favourite text editor, and there's support for direct linking with an image viewer if you've got digitised pictures stored on the computer.

Unfortunately, there's no on-screen support for displaying the kind of "descendant chart" that most people think of genealogy in terms of. However, you can print such a chart out, as well as a "pedigree chart". (Which makes me think: you could no doubt use this for horse breeding charts, too...)

The limitation of 999 people per file may be a problem to some – if you've got a fairly complete history going back a few generations, the numbers soon build up. But in terms of user interface, on-line help (let's see more authors using *AmigaGuide)* and general user-friendliness, this is definitely one of the best I've seen. Highly recommended.

Program rating 9/10

OSCILLOGRAPH

Fish disk 866

Oscillograph simulates an XY oscilloscope (or, as the German author prefers, an "oscillograph"). If you have an "Amiga Sounder" analog-to-digital converter hooked up to your machine, it should even act as a real 'scope.

The more you get into this program, the more powerful it becomes – although even at first sight, it should be good enough to please third- and fourth-year physics teachers trying desperately to explain Lissajous figures to restless kids. The main screen provides you with five different oscillations on each of the X and Y channels (or, of course, the choice of four digital channels if you have the correct A-to-D converter). Select, say, sawtooth on the X channel and **Sinus** (sine) on the Y and you'll get the familiar sine wave. Now increase the "frequency factor" on either side and you'll start to get more interesting images. A frequency factor of 2 means twice the original frequency, 3 is three times and so on. Because you can vary both X and Y frequencies from 1 to 9, you should be able to get just about any effect that you want. Moving the **Phase** slider below the display changes the phase from 0 to 359 degrees – and, of course, as you alter the phase the image moves on the screen. Just below **Phase** is a rather neat effect called **Anim.** This automatically changes the phase for you – so animating the display. The higher the **Anim** setting, the faster the phase change.

But that's not all. If you want to

GET IN CONTACT!

If you've written – or discovered – any PD, shareware or licenseware that you think should be reviewed in these pages, or if you've got any comments or suggestions, write to Ian Wrigley c/o *Amiga Shopper*, 30 Monmouth Street, Bath BA1 2BW. Alternatively, you can contact Ian on cix as 'iwrigley', or on the internet as 'ian@vampire.demon.co.uk'.

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❑ ^+ **V731 AMOSBROT v1.1a** More fractal types which include Logistic Equation, Coast lines & trees
❑ ^* **V732 WB v2.04+ UTILITIES** FPic DCopy, Boot Menu, Scenery, Huge.
❑ ^+ **V733 SOFTWARE LISTER v1.6** This program is designed to keep a track of your Software collection.
❑ ^+ **V742 ONLINE v1.4** Program will allow you to find cheats within games.
❑ ^+ **F691 PROFESSIONAL C MANUAL v3.0** Is the largest collection of utilities, documents & examples for C, It consists of six manuals, with over 40 chapters **(5)**
❑ ^+ **V757 AMIGADEX v1.61** Creates a card index database system.
❑ ^+ **V758 TEXTPLUS v4.0e** Another update of this excellent Word processor program. Requires Hard drive
❑ ^+ **V759 TEXT ENGINE v4.0** Updated version of the Word processor with **AZSPELL.** Excellent spell checker
❑ ^+ **V761 A-GENE v4.18** The latest version of the popular genealogy data-base program.
❑ ^+ **V770 ACCOUNT MASTER v2.12** Excellent Amos written program
❑ ^* **V773 WB v2.04 WINDOWBENCH v2.0** Excellent Workbench replacement for all WB v2.04+ Users **(2)**
❑ ^+ **V777 VOICE CLI v5.5** The idea is to control the CLI with your own voice.
❑ ^+ **V778 RAYSHADE v4.0** Complex Ray tracing package. 2Mb **(3)**
❑ ^+ **V782 FORMS** Create, Edit, Draw , Colour & print your own forms
❑ ^+ **V783 PROGRAMMING TOOLBOX** Many programs to help in your development efforts (most C but some in basic).
❑ ^+ **V784 AREXX (2)** disks which contain Arexx programs & examples
❑ ^+ **V786 PASCAL** This disk contains everything needed to program in Pascal. Includes a68k 68000 assembler & more.
❑ ^+ **V787 PROGRAMMER TOOLS** GadTools to design your user interface to your own programs using all of Amiga DOS 2.0+s new features. Also RegTools.
❑ ^+ **V790 ANIMATION UTLS** Includes CyroUtils for splitting, combining, and creating animations from IFF picture files.
❑ ^+**V791 DIRECTORY ULTS** Highly reco-mmended programs which are designed to make CLI & Shell tasks virtually obsolete.

❑ ^+ **V794 GRINDER** Complete graphic conversion package that supports GIF, JPeg, Atari St (Neochrome / Degas), PCX, Targa, TIFF, Ham-E and IFF Format pics.
❑ ^+ **V797 EASY AMOS PROGS** Contain source code for use with Easy Amos. **(2)**
❑ ^+ **V799 ADVENCED UTILs** SerNet & ParNet, Connect 2 Amigas & share resources via the serial or Parallel ports. MyMenu WB 2.0 menus
❑ ^+ **V801 100 PRO PAGE 3 FONTS** Theses fonts are for use with Pro Page & have be checked with the font converter which comes with your Pro Page3.
❑ ^* **V806 WB v2.04 UTILITIES (2)** 2nd collection of WB v2.04+ utilities that take advantage of the NEW capabilities.
❑ ^+ **V811 ELECTROCAD v1.42 & PRO TOYPER** Electronics drawing Programs.
❑ ^+ **V812 CANON** This disk contains Printer Drivers & Canon Studio, Gives better print output for any 9 pin printer.
❑ ^+ **V815 FILE & HD 2** DirWork v1.62 MegaD File copier like Disk Master **(2)**
❑ !- **V817 A500 PLUS EMULATOR** As it sounds will let v1.3 / v1.2 owners run WB v2.04+ software with out any need to purchase to WB v2.0+ chips.
❑ ^+ **V818 INSCRIPT v1.1** Produce video titles. Includes fully editable text entrys, Use IFF Pictures as back grounds
❑ ^+ **V820 BBBBS v5.7** Baud Bandit bulletin Board System Ftures include up to 99 file libraries, interface to extra devices
❑ ^+ **V821 SNOOPDOS v1.5** Monitors AmigaDos calls & allows you to see what library, devices, fonts are required.
❑ ^* **V822 BACKUP v3.77** A hard drive backup program that features, multi-drive support, full backup, compression.
❑ ^+ **V823 POWERPLAYER v3.4** Very powerful, user friendly module player. It can handle nearly all module formats
❑ ^+ **V826 AHDM v3.4** Hard Drive Menu. When placed in your startup-sequence, offers a 16 page menu
❑ ^+ **V827 REPAIR-IT 2: NewZap v3.3,** A multi sector file editing system. **FIXDISK v1.2,** Recover's as much as possible from a defective disk **DISKSALVE v1.42,** Creates a new file system structure on another device, with as much data salvaged from the original device.
❑ ^+ **V841 MODULA-2** Contains modula-2 language on the Amiga.
❑ ^+ **V842 SID v2.01** Sid can be used for various operations, The best is the file copier on the Amiga.
❑ ^+ **V844 DELITRACKER v1.3** Powerful & system friendly music player. Will play over 40 difference types of modules.
❑ ^+ **V845 Q.M.J v5.31** Generate julia sets & complex Quaternion Julia slices. mandelbrots.
❑ ^+ **V846 SCOPIOUS MAPPER** An excellent Dungeon mapping program
❑ ^+ **V847 MONEY MANAGEMENT v1.01** Home accounts which allows you to keep track of upto 12 accounts
❑ ^+ **V848 SLIDESHOW GENERATOR v3.1** Creates slideshows of pictures in various formats for the amiga.
❑ ^+ **V850 FRAC v1.1** is a graphical Role playing game creator.
❑ ^+ **V856 PICTURE TOOLS** Converts Pictures to other formats and styles.
❑ ^+ **V857 POSTSCRIPTERS** Down loads Postscript Fonts for printing on standard Dot matrix printers.
❑ ^+ **V858 MUSIC MAKERS** A selection of programs to produce music productions. Make your own music
❑ ^+ **V859 AUDIO TOOLS (2)** Sound and Audio production utilities.
❑ ^+ **V861 3d DESIGNER** Various 3d graphic production utilities including CLight, DKBTrace
❑ ^+ **V865 IMAGE PROCESSORS** Contains Tools to perform a wide variety of Image Techniques (IFF)
❑ ^+ **V866 MANDEL EXPLORER (2)** This is the best collection of Fractal Generating software on the Amiga.
❑ ^+ **V869 ANIMATION ASST (2)** Will solve many of your animation problems. Includes ABridge, Players, DA, AnimTools
❑ ^+ **V871 3d HELPER** Are you starting out with 3d graphics. This is what you need.
❑ ^+ **V872 ICON TOOL KIT** Just about every tool you could imagine
❑ ^+ **V873 UGFC v1.1** Will help you translate between Graphic formats
❑ ^+ **V875 SPACE** Help you study, identify the Stars & celestial objects.
❑ ^+ **V876 SYSTEM TEST v4.1** Checks & reports on your computer
❑ ^+ **V879 BEAT DIS MODULES** For use with OctaMED includes a Player
❑ ^+ **V882 MAGNUM v1.4** Another excellent Disk Magazine Creator.
❑ ^+ **V888 TRONI CAD v1.0** The best CAD program for your Amiga. WITH Various power functions.
❑ ^* **V896 TOOLMANAGER v2.0** Includes the ability to add menus to your Tools menu. add WB icons or Windows.
❑ ^+ **V899 ABACKUP v2.4** A Powerful backup utility that may be used for Hard Drive backup & File Archiving.
❑ ^* **V900 BOOTJOB v1.0** Include functions to store, install, view or execute any bootblock. Can save BB as executable
❑ ^* **V901 FIM v2.2** IntroMaker to create you own Intros. IFF imports
❑ ^+ **V921 COMPUGRAPHIC FONTS** Will work with DPaint v4.1, ProPage3, Pagestream, Page setter & Work bench v2.04+. About 30 Fonts **(3)**
❑ ^+ **V924 PLOT MAP v0.85** An extra disk for use with Draw Map v4.0 or v4.1. Will allow use of the Draw Map program with 512K machines
❑ ^+ **V925 SLAUGHTER CHEATS** Selection of WB Hacks & Cheats
❑ ^+ **V928 THE LITTLE OFFICE** One of the best disks at the present time. has a Word Processor
❑ ^+ **V936 LETTERS & BOILERPLATE** Letters for you to use as your own or cut & pause into a Word Processor
❑ ^+ **V942 SCREEN BLANKERS** A disk packed with screen blankers. Includes the Twilight Zone screen blanker along with 10 others
❑ ^+ **V943 LYAPUNOVIA v1.5** Mind-boggingly colourful program that makes pictures from a mathematical formula. Now with AGA support
❑ ^+ **V945 PROPAGE 3 ENHANCER** Over 40 Genies for use with ProPage 3.0, including useful ones like Make Pie Chart & others. Includes structured clipart for unique borders!
❑ ^* **V946 SYSTEM OPTIMIZER** KCommodity gives you memory meters, mouse/keyboard enhancements. REorg will optimize hard / floppy disks for big speed increase. HDMem virtual memory. 2 Meg of HD space for 2Mb
❑ ^+ **V947 GNUPLOT** Is a command driven interactive function plotter. Creates stunning plot/graphs of mathematical functions. Requires a hard disk drive
❑ ^+ **V948 INTUITION BASED BENCHMARKS v5.5** A great package with all the popular BMs like Sieve, Dhrystone, Savage, IMath & Matrix.
❑ ^+ **V949 TESTS** Contains all of the classic speed tests and system checks we could find. Includes CPU Speed, A full featured system diagnostic tool & more.
❑ ^+ **V950 GAME CONSTRUCTION** ADL is a programming language and run-time environment designed for the convenient writing of adventure games.
❑ ^+ **V951 PROTECTION** is a collection of utilities aimed to protect your data and protect autobooting HDs & Document File. Lock your data files with a password
❑ ^+ **V952 x-BENCH v1.0** Complete solution to the replacement Workbench. Contains Degrader, LastHope, View, Virus Checker, Power packer and DCopy2
❑ ^+ **V957 TACKS v1.2** Help you create self-booting animation disks.
❑ ^+ **V958 CLUB LEAGUE** Is a utility that will allows you to edit and keep track of your divisons/leaggue stats.
❑ ^+ **V959 AMIGA_E v2.1b** Specific compiler. E is a powerful and flexible procedural programming language
❑ ^* **V962 SUPER KILLERS v3.0 (2)** The latest Virus Killers like BootX v5.23a, which can save any bootblock and install it on another disk as well as check for viruses. VC v6.2 and VirusZ
❑ ^* **V976 WB v2.04 UTILITIES 6** Next collection of WB v2,04+ utilities.
❑ ^+ **V977 FILE & HD No 5-6** Next Excellent collect of HD utilities. **(2)**
❑ ^+ **V979 NCOMM v3.0** Is a communications program based on Comm v1.34 with lots of very nice enhancements
❑ ^* **V980 KICK v1.3** Will down grade A500+, A600, A1200 users machines to run software that would NOT normaly work. Turns them into a Workbench 1.3.
❑ ^+ **V983 MEGA CHEATS v3.0c** Now contains over 500 cheats.
❑ ^+ **V984 PROTRACKER v3.0a** The latest updated version from Norway, Various bugs fixed and 70 new features
❑ ^+ **V988 ZIPBENCH v4.0** Another Workbench replacemant but contains excellent utilities like, powerpacker v2.2a, powerplayer, SysInfo, VirusX, Archiver, b-Base, BootIntro, Degrader, Fist Aid Box **(2)**
❑ ^+ **V994 THE MONEY PROGRAM v1.5** Features include upto a maxium of 60 accounts, upto 50 direct paymenys,
❑ ^+ **V1000 GRAPHPRO v1.0** Written with Amos pro by David Jordan. Basically takes a set of data, plots them on a graph.
❑ ^+ **V1001 VMORPH v2.21** By Lee Wilkie will allow you to create smooth morphs/warps between two different images over a period of frames to create an animation. New version
❑ ^+ **V1002 RAMOS PRO FOR AMOS PRO** If you have Amos Pro then this disk make your programs Boot without having to use Amos pro
❑ ^* **V1003 NICKPREFS** Is an enhancement to WB 2/3 which adds 3 new preferences WBPicture, BuzyPionter & Floppy.
❑ ^^ **V1005 WB v3.0+ UTILITIES** Is the first in a series of upcoming disks for the 1200 & 4000
❑ ^+ **V1009 TURBO TEXT v1.1** Excellent Word Processor. Very impressiveversion
❑ ^+ **V1013 POOLS PREDICTION** Need another helping hand with the Pools then this is it.
❑ ^+ **V1016 OCTAMED v2.0** Music editor which was designed for making music for programs. **(FULL & NEW VERSION)**
❑ ^* **V1017 POST v1.86** An excellent Postscript interpreter for the Amiga which implements the full Adobe language **(3)**
❑ ^^ **V1021 WB 3 SCREENS** Enhance your Workbench disks backgrounds with theses nice full coloured pictures
❑ ^+ **V1022 LITTLE TRAVELLER v1.1** Shows a world map & you can select any country for travel information, Zooms up another close up map with more detail.
❑ ^+ **V1023 QUIZ** Contains Questions & Answers with the option to add
❑ ^^ **V1024 MANDELSQUARE v1.6** Program to generate enhanced AGA chip set Mandel-brot set images, requires an 020+ CPU & a numerical coprocessor. You can create 256 colour coloured pics
❑ ^* **V1025 TERM v3.1** Comm prgroam, Xpr transfer, filetype ident after download, cut & paste, point-and-click, auto upload/ download, VT102/VT220, Ansi emulation, powerfull phone book & AGA support **(3)**
❑ ^* **V1034 ADM v1.01** Flexible address database with loads of great features.
❑ ^+ **V1035 FES BASIC** Just in time for all the new machines which do not have Basic with thier machines any more.
❑ ^^ **V1037 (AGA) A1200 WB HACKS** An excellent collection of Utilities & Hacks
❑ ^+ **V1038 AMOS PRO UPDATER v1.11** 1st Update to the Amos Professional
❑ ^^ **V1039 (AGA) WB3.0 INSTALL** If you need to install your A1200 HD then you need this.
❑ ^+ **V1040 bBASE III v1.3** An easy to use, versalite, yet full featured data base program. Greatly enhanced successor to bBASE II.
❑ ^+ **V1041 DIGITAIL BREADBOARD** Full featured digitail circuit simulator
❑ ^* **V1043 SUPER DARK v1.5** A screen blanker like After dark from the MAC theres about 30 blankers.
❑ ^+ **V1044 FANCY PRINTING DISK** Contains Banner, Graph Paper v1.2 and Disk Print v3.59.
❑ ^+ **V1045 uDRAW v1.0** Provides a mechanism for the rabid drawing of schematic diagrams. Bitmap oriented
❑ ^+ **V1046 THE XI RAVE SAMPLES** Grarett Watt's IFF 808 State samples
❑ ^+ **V1048 HAM-8 VISTAS (2)** Collection of Ham-8 Vista drawings
❑ ^+ **V1051 EASY CALC v1.0** A spread sheet designed to be both easy to use and fast. Built in excellent help system.
❑ ^+ **V1054 ADVANCED UTLS 2** Compress Disk doubles the capacity of your D on the fly with compressions Also DiskOptimizer, SCSI Mount and more.
❑ ^* **V1055 PARBENCH** All the software you need to hookup 2 Amiga's or CDTV's.
❑ ^+ **V1056 DEVELOPER** Contains the official Commodore developers Kit for the Amiga Guide & install utilities.
❑ ^+ **V1057 EDPLAYER** Music MOD player that looks, acts & plays like a CD
❑ ^+ **V1058 3D GRAPHICS** Several 3d moddeling/ray tracing programs
❑ ^+ **V1059 GRAPHICS** Create stunn-ing graphical images. MPath creates swirling galaxy images. Roses, Rayshade
❑ ^+ **V1060 CIRCUIT BOARD DESIGN** Includes mCAD v1.26 and several terrific routines for the electronic enthusiast.
❑ ^+ **V1061 DISK UTLS** Several highly recommended programs for performing file hard drive backup, file recovery, disk track recovery, and forced disk validatuion
❑ ^+ **V1062 DESKTOP PUB** Transfers Macintosh screen fonts .AFM metric files to Amiga fonts/PPage .metric files.
❑ ^+ **V1063 RIPPERS, STRIPPERS & BEATS** For the music enthusiast, designed to strip music from your favorite games
❑ ^+ **V1067 3D OBJECTS 3** About 20 objects in Sculpt / Turbosilver format
❑ ^+ **V1069 PRINTER DRIVERS 5** Deskjet 550c, 500, 500c, Ricoh HP1200 400dpi, Canon BJ300, 130, LPB, 10e, PJ1080a HP Paintjet.
❑ ^^ **V1070 (AGA) UTLs 2** Contains 256 colour icon editor, Plamsa256 and QuickGrab v1.1.
❑ ^^ **V1071 (AGA) MSM v1.8** Martins system monitor for programmers
❑ ^^ **V1072 (AGA) WINBLENDER v39.28** Will create excellent/stunning AGA fractals. Also contains 68030/ 040/FPU versions.
❑ ^+ **V1073 FT-X ACCOUNTS v2.01** Was written as there are not ready any other good account packages.
❑ ^^ **V1074 (AGA) UTLS 3** The next collection of AGA Based utilities. Includes Kill AGA Which allows you to run old badly written programs incluing demos and some somes.
❑ ^* **V1077 GENEALOGIST v3.04** Is a specialized database for keeping track of genealogical information. Full featured & a wide selection of features to use.
❑ ^+ **V1078 PC TASK v2.01** is a software IBM-PC emulator. It allows you to run the majority of PC softwAre on your amiga with no additional hardware. Now supports VGA, EGA, CGA and MDA. This is a demostration version.
❑ ^+ **V1079 KEYBOARD TRAINER v1.1** Best Public Domain Typing Tutor An excellent New program / Amiga
❑ ^+ **V1081 REPAIR-IT 3** The next selection of Disk and Hard Drive repairing / saving utls for the Amiga
❑ ^+ **V1083 CROSS v5.1** is a program that creates crossword puzzles for you
❑ ^+ **V1084 SPECTRUM EMULATOR v1.6 (2)** This is the best & latest version of the most popular emulator for the Amiga. There is an 020/030 versions now on the disk which enhance the games on disk.
❑ ^+ **V1087 STOCK ANALYST** is a technical analysis and securities tracking program which calculates when to buy and sell shares.
❑ ^* **V1088 WORKBENCH 2.0 AND 3.0 UTLS** Contains ChkFrag, DFC5, FastDos, Formatter, NoClick, UnDelete, KeyMac, MegaWB, MR, One Plane, OpenLock, ResumeMaker & StarBlank.
❑ ^+ **V1089 STATRAM v1.5** A very recoverable ram drive based on VD0 but 5 times faster.

AMIGA GAMES

❑ ! - **1073 TETRIS ORIGINAL** This is the closest game to the original tetris
❑ ^+ **1420 DTRIS** If you want a1 or 2 player Tetris this has to be 1 of them.
❑ ^+ **1561 TRITWIS** Contains 1 player, 2 player & 3 Payer game options.
❑ ! - **1747 LLAMATRON GAME 2001** By Jeff Minter & an excellent production.
❑ ^+ **1749 SCRAMBLE** 'The Original' Remember that old classic gam ulse
❑ ^+ **1870 PATIENCE'S** Play vs the computer or another human player.
❑ ^+ **1977 POM POM GUNNER** Shoot down world wor II air planes in this Operation Wolf
❑ !- **2018 JETMAN** A Spectrum classic converted to the amiga. with all the original sounds.
❑ ^+ **2022 SEA LANCE** The first Silent Service type sub war game on PD
❑ ^+ **2054 ATIC ATAC** A rendition of the game from the original Spectrum
❑ ^+ **2162 BATTLE OF BRITIAN WAR** GAME 2 Strategy war games.
❑ ^+ **2164 DUNGEON ON NADROJ** This is the best Dungeons & Dragons Public domain type game. Load Wb
❑ ^+ **2220 STRATEGIC GAMES** Eternal Rome, Lords of Hosts, In Moonshine.
❑ ^+ **2221 MIND GAMES 21** of the best games to challenge your mind
❑ ^+ **2272 BLACK JACK LAB** Play all the popular versions of Pontoon
❑ ^+ **2278 CARD SHARP** A profession-ally presented selection of solitaire games.
❑ ^+ **2279 SUB ATTACK v1.0** Control the torpedoes & sink the enemy
❑ ^+ **2280 DIPLOMACY** Classic strategy game loosely based on World War 1. 2Mb
❑ ^+ **2313 REVENGE OF THE MUTANT CAMELS** The ride of a life time with camels
❑ ^+ **2396 PETERS QUEST** Is truly an excellent platform game for all ages.
❑ ^+ **2411 TOTAL WAR** Strategy world conquest type game. 1 or more players
❑ ^+ **2432 GOLDEN OLDIES** Galaga, Galaxians, Space invaders, Asteriods, Batty & Missle Command.
❑ ^+ **2436 DRAGON TILES** Mahjong is a ancient chinese game with coloured tiles
❑ ^+ **2447 COINDROP** Fruit Machine simulator with various gamble modes.
❑ ! - **2448 CRAZY SUE** Another first rate cute school girl platform game.
❑ ! -> **2450 SMASH TV** Simular to the arcade machine. Graphics & sound
❑ ^+> **2480 FRUIT MACHINE 2** As near as poss to the Arcade machines
❑ ^+ **2482 DESCENDER** Is a clone of the arcade, Tempest vectorized game
❑ ^+ **2483 INTRUDER** is a Multi level Berserk clone with smooth graphics.
❑ ^+ **2484 CATACOMB v1.7** Graphical Adv game set on a small island in the middle of the land of EXOUSIA
❑ ^+ **2485 IRON CLADS** (1Mb) Update to the excellent Strategic War Game **(2)**
❑ ^+ **2491 LEGEND OF LOTHIAN v1.02** An adventure game in the vein of Ultima.
❑ ^+ **2494 HUNCHBACK** This is a conversion of the old classic game.
❑ ^+ **2498 AMOS CRICKET** Excellent arcade cricket simulator with graphics.
❑ ^+ **2534 BATTLE CARS II** Get behind the wheel of a heavily armed car as you race round courses.2 players with the computer link
❑ ^+ **2535 SUPER PACK MAN 92** This is the best Pack man to date with super smooth scrolling & excellent graphics.
❑ ^+ **2613 DUAL** 2 player game where you control armoured tanks & rockets.
❑ ^+ **2614 TETREN** is a 1 or 2 player Tetris game. 2 player is Head 2 Head
❑ ^+ **2615 WAR** Strategy war game in which you control a fleet of space craft.
❑ ^+ **2617 GOLDEN OLDIES 2:** Croak, Excellent 1 or 2 player version of Frogger. BiPlanes is the most additive games we have played here 2 player only. TrailBlazer, C64 Classic. Scamble
❑ ^+ **2620 DR MARIO** A Tetris like game where you move coloured pills down the screen. 3 in a row go's
❑ ^+ **2621 ETERNAL ROME** Start the roman Empire from 32BC. Build fleets, armies & send them into battle.
❑ ^+ **2622 DONKEY KONG** Original platform game in which you must rescue the girl.
❑ !+ **2674 INTERPID** In the Artic ice you control a tank on a mission to rescue hostages in this superb Amiga origional
❑ ^+ **2676 MORIA v5.4** Loads of new features, better graphics, larger dungeons, screen updates, overview of dungon's map
❑ ^+ **2710 CLASH OF THE EMPIRES (2) v2.1** Strategical War game By T.A.Sear
❑ ^+ **2712 ACT OF WAR** Simular in style to the classic game Laser Squad. You control a team of special troops.
❑ ^+ **2715 TANK ATTACK** This is a 1-4 player version of the Classic Cartridge game Combat. 4 Joysticks can be used.
❑ ^+ **2716 RESCUE** Spaceship game simular to Scrample. Excellent graphics
❑ ! - **2721 E-TYPE II** Asteriods adv where you jet around collecting weapons
❑ ^+ **2723 SOLITAIRE** Popular card game on the amiga. Excellent version.
❑ ^+ **2724 NEIGHBOURS** This is the best graphical adventure game **(2)**
❑ ! - **2732 CYBERNETIX** Defender, Star Gate style game with super fast scrolling.
❑ ^+ **2738 AIR TRAFFIC CONTROL** Try to guide upto 100 planes into the AirPort
❑ ^+ **2775 ROULETE ROYAL** Why not do some gamble with chips at the casio
❑ ^+ **2778 SOCCER CARD** Truly a very simple Football Management game.
❑ !+ **2802 CARD-O-RAMA** Sea heven, Crib Klondike, Black-jack, Spades, Street .
❑ !+ **2803 PUZZLES** Gold, Dumbbell, Flying, CobraBunny,Get My Goat,Wordhai, Rmyca, Rabbit and much more.
❑ ^+ **2808 LADY BUG** Classic game simular to Pack man in style
❑ ^ + **2811 WIZZ WAR** Shoot with fire balls not fire power through unknown Lands.
❑ ^ + **2814 BULL RUN v1.3** This is one of the classic stratergy games.
❑ ^ + **2825 ALL ROUNDER** A Cricket simulation with great graphics & play
❑ ^ + **2842 CRAZY SUE II** Sequal to the all time best selling PD platform game.
❑ ^+ **2854 SPACE INVAIDERS II** A revised old classic Space Invaiders game.
❑ ^+ **2863 FIGHTING WARRIORS** A karate combat fighting contest game.
❑ ^+ **2876 ESCAPADE** Break bricks in a wall by hitting a ball with bat. Break Out
❑ ^+ **2932 NUMERIX** Enjoy puzzles / Tetris then this is a must. You have a scrabble board & you must place tetris blocks to get points.
❑ ^+ **2941 EXTREME VIOLENCE** Scrolls around much bigger than Smash TV
❑ ! - **2949 OBLIVION** Is the closest I have seen to the original defender
❑ ^+ **2987 BOMB JACKY** A conversion as the original but it's as the best yet
❑ ^+ **2988 BALDERS GROVE** its here Boulder dash with a selection of levels
❑ ^+ **2991 VEKTOR** Tron Light cycles game with excellent graphics, sound
❑ ^^ **3023 UCHESS (AGA)** Do you love chess then try this. 4Mb & WB 3.0
❑ ^+ **3037 SSW** Is a game for 2 based around Space Wars but with many extra features like Planets, Stars & systems
❑ ^+ **3038 TANK HUNTER** A 2 player Tank Attack game with various levels
❑ ^+ **3039 ASTEROIDS II v0.85** This is the best version of Asteroids i have ever seen, If you like Asteroids games then this is for you
❑ ^^ **3040 TETRIS (AGA)** If you like tetris, you need this disk. AGA graphics.
❑ ^+ **3075 18 HOLE GOLF (2)** The first excellent golf game. Select speed & power
❑ ^+ **3162 SON OF BLAGGER** This is a classic (64/Spectrum) platform conversion Can you remember how active it is to play
❑ ^+ **3214 UNIV CONQ** A strategy game where two human players battle for control of the universe. Status information is continually updated to allow the player to concentrate on strategy. Includes digitized pictures and sound.
❑ ^+ **3215 BATTLE STAR** A fun text adventure game like Zork. You start out on a space ship under attack and you must get to a planet

STAR TREK + SI-FI

❑ ^+ **AT05 KLINGON D7 CRUISER** fires torpedoes while passing by **NCC-1864**
❑ ^ + **AT10 ENTERPRICES** Leaves the Star station dock. **NCC 1701-A** classic original
❑ ^ + **AT22 APPROACHING VESSELS**
❑ ^ + **AT23 STAR TREK FLEET MANEUVER**
❑ ^ + **AT33 THE PROBE II** Anim. & **BRID OF PREY**
❑ ^ + **AT34 LEAVING SPACE OFFICE** Docking Attack mode, Bird of Prey Scout attacking
❑ ^ + **1060 STAR TREK *: TNG** By Terry A Mc Intosh
❑ ^ + **1081 UTLTIMATE STAR TREK (2)** Game by Tobias Richter. Now in English
❑ ^ + **2222 STAR TREK TNG** This is the latest quiz game based on the T.N.G **(2)**
❑ ! - **2501 STAR TREK** By Jimbo Barber **(2) (2dd)**
❑ ^ + **2503 STAR TREK** Eric Gustafson. **(3) (2dd)**
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Code Numbers

+	Works with Workbench 2.0
*	Workbench 2.0+ Only
^	Works with Workbench 3.0
^^	Workbench 3.0+ Only
>	Not A600 Machines
-	Not A500 or A600 Machines
!	Not Workbench 3.0
??	Requires ?? Amount of disks
??Mb	Requires ?? Amount of memory

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❑ ^^ 3063	(AGA) HOIS MEGA DEMO
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❑ ^+ 2763	ITS TIME TO PLAY
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change the waveforms, just click twice on one – and you're taken into the Oscillation Editor window. Here you can load pre-defined waveforms, draw your own or even use the Function Plotter to plot an equation on the 'scope. When you're happy, you can go back to the main screen to see how everything looks.

My only real complaint is that the only way to get to the function editor is to click on a function name – there are no menus at all in this program. Sure, it's not a real problem – but I'm all for consistency across platforms, and not having any menus certainly isn't good user interface design. Still, for a program this neat I can forgive that one idiosyncrasy. I expect this particular Fish disk to appear in a hell of a lot of Amiga-owning school science departments in the very near future!

Program rating 10/10

PC-TASK (DEMO)

Fish disk 866

PC-Task is a software-only PC emulator for the Amiga. As such, you really shouldn't expect too much in the way of speed; but on the other hand, if you just want to see what the fuss about PCs is all about, it's really not too bad at all. It certainly seems to run the (admittedly few) PC programs that I tried, such as Microsoft's *DOSSHELL*, with few if any problems.

The major limitation of this demo version is that writing to disks isn't supported. Before you run off yelling "well, it won't do anything, then", there's actually still a fair bit that you can do – certainly enough to decide whether the speed is going to deter you from paying the A$40 registration fee. The other main limitation of the demo is that printing is disabled.

Starting the program is simple: just run the *PC-Task* application, having first run a patch file if you're using Workbench 1.2 or 1.3. You're presented with a set of requesters for things like what type of video emulation you're going to be using (MDA, CGA, EGA and VGA are all supported), which Amiga drives are going to emulate PC drives (remember, you can't have a hard drive in the demo version because you can't write to disk), how much memory to allocate to the PC and so on. Then insert an MS-DOS boot disk into **df0:,** hit the **Start** button and you're launched into the wonderful world of the PC.

That's the other problem: if you don't have a PC you won't be able to get your hands on a boot disk – a floppy with the basic MS-DOS system on it, rather like an AmigaDOS boot disk. It's easy to create a DOS boot disk if you have a PC – just type **format a: /s** – but if you don't have access to a PC, your only option is to buy MS-DOS, which will set you back £40 or £50.

The first thing you'll notice is exactly how slow things are – it takes a good length of time for the system to boot, and launching programs also ain't fast. On the other hand, I have to admit that I was quite surprised at the speed – I was expecting a five-minute wait before anything happened, and it's a good bit quicker than that.

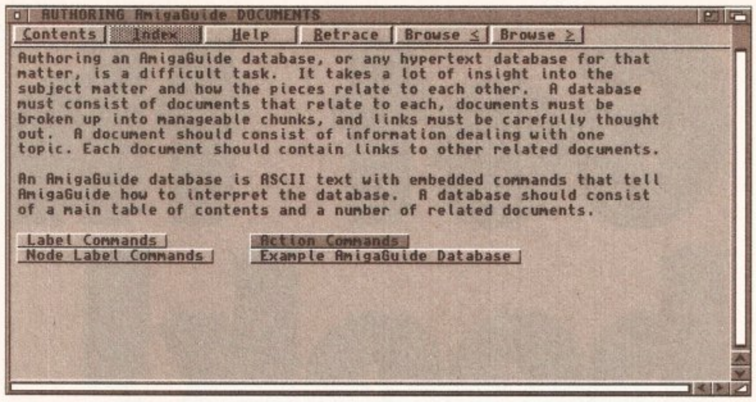
One neat part of *PC-Task* is that it does multi-task reasonably – at least, I was able to get back to the Workbench screen by pulling down the PC screen, and Workbench programs ran with no complaints (that's how I got the screengrabs: using Preben Nielsen's *PictSaver* utility).

The only thing I couldn't seem to get quite right when I was trying out the demo was the mouse emulation – *DOSSHELL* didn't want to know. However, since virtually all DOS programs can be used with the cursor keys rather than a mouse, that wasn't too much of a problem.

PC-Task really was a pleasant surprise. It isn't the clunky, ultra-slow package I was expecting, and I'm sure that on a 68020, '030 or '040 Amiga it will whizz along (well, relatively). Indeed, when you register you get an additional version of the program that's been optimised for the '020 processor.

If you're at all interested in the whole subject of emulation, or you want to see what a PC looks like running in one screen while your Amiga gets on with something else, I'd strongly advise checking this program out. It's an excellent piece of work, and the author, Chris Hames, is to be congratulated.

Program rating 9/10



AmigaGuide, the hypertext document navigation system, is now available to all, via Fish disk 870, so you too can benefit from embedded "hotlinks".

CLOCK

Fish disk 869

If you don't already have a floating clock on your Workbench screen, you could do worse than use this $10 shareware effort from Bernd Grunwald. It can be set to display just the time, the date, and your free memory (divided into Chip, Fast and Total). It can be set to follow you on to other screens that are opened, and will re-open in the place that you last positioned in on the screen if you save its configuration.

The main other feature is that the program has an "alarm" function; set this and you can have the Amiga chime (it will also chime the hours if you wish), or launch a program (although I don't see a great deal of use for that...).

All in all, it's pretty good, although there are plenty of similar free programs around – its only really uncommon feature is the alarm option. If that's important to you, check this out.

Program rating 7/10

AMIGAGUIDE

Fish disk 870

Amiga owners without the latest version of Workbench must have been getting rather fed up with more and more PD and shareware developers releasing their "read me" files and documentation in *AmigaGuide* format. *AmigaGuide* is a hypertext viewer which allows "hotlinks" – that is, text which is automatically linked to another area elsewhere in the document. Click on this "hot" text and you are automatically taken to the new position in the file. It's part of the latest version of Workbench (3.0), but those of us without it have had to make do with viewing the files using a normal viewer such as *MuchMore* and ignoring all the special formatting commands that an *AmigaGuide* file contains.

Well, Commodore have now allowed Fred Fish to place the developer version of *AmigaGuide* on disk 870. If you're just a user, and have no intention of actually creating *AmigaGuide* documents yourself, all you need to do is extract the *LhA* archive from the disk and double-click on the installer. Everything will be done for you, and from now on double-clicking on *AmigaGuide* documents will open them properly for you. But if you're a developer or you want to create your own documents, there's a lot more work to be done – it's a tricky business, although all the documentation included should be of some help.

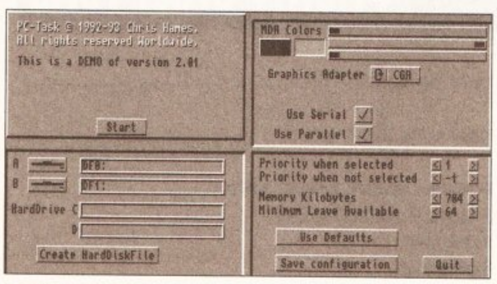
It's great to see that Commodore have decided to make *AmigaGuide* available to all Amiga owners (well, all owners using Workbench 1.3 or higher); it shows in some small way the company's commitment to their users – and quite apart from that, it's a bloody fine implementation of hypertext, and one that I was feeling well left out not owning!

Program rating 10/10

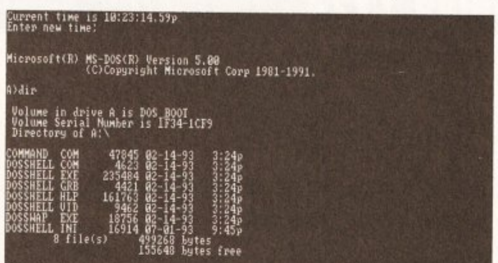
INSTALLER

Fish disk 870

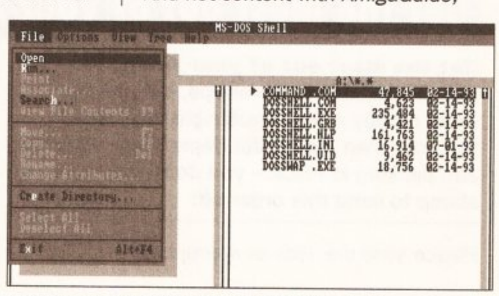
And not content with *AmigaGuide,*



Setting up PC-Task, a software-only PC emulator for your Amiga, is simple – a few basic selections on this configuration screen and you're off...

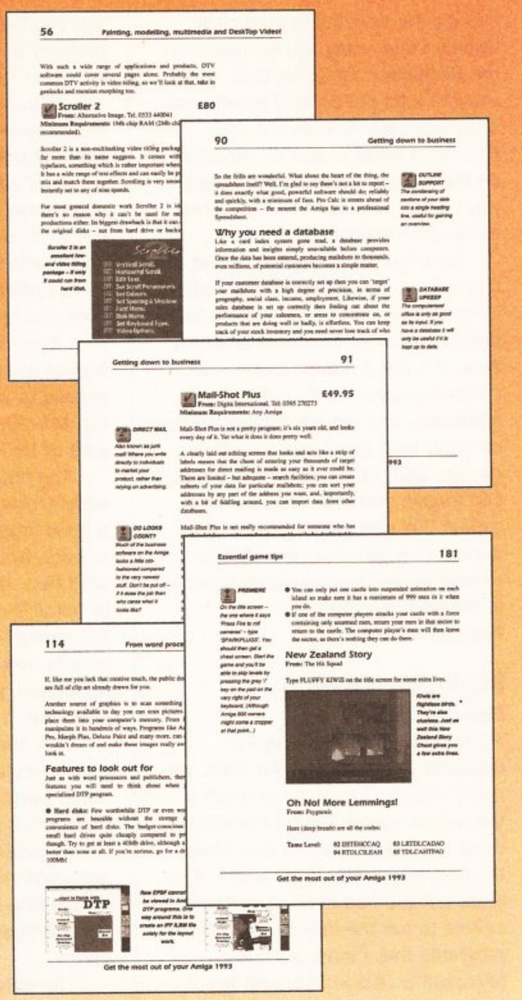


Here's DOS in all its glory, courtesy of PC-Task. You can even use the Amiga's multi-tasking capabilities at the same time – one up on PCs!



And here's the Microsoft MS-DOS shell program DOSSHELL, running perfectly – if rather slowly – on my A500 Plus, with no extra hardware required!

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Get the Most out of your Amiga 1993 is the third edition of the best-selling Amiga title first launched in 1991. The aim is simple: to produce the most authoritative, comprehensive and up-to-date guide to the Amiga, its uses and its software.

Separate sections are devoted to specific subjects like music, word processing etc. and they're structured so as to firstly provide background information about that area and secondly offer specific product recommendations.

The Amiga market continues to expand at a terrific rate following last year's hardware launches. Because of this, Get the Most… has been completely rewritten for 1993, and in the process has swelled to well over 300 pages. Also included are two disks packed with specially-selected public domain and shareware software.

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Commodore have also let Fred put the *Installer* in his library. Again, this is a package which ships free with later versions of Workbench, and a number of shareware packages are starting to contain *Installer* scripts for easy installation of software on a hard drive. And again, until now those of us without the *Installer* have had to do those installations by hand.

Commodore's idea is that the *Installer* should be distributed by such means as the Fish disks, so that as many users as possible have a copy of the package. Then PD and shareware authors, as well as commercial developers, can ship *Installer* scripts and be fairly sure that they will be usable by recipients of their software. The package on this Fish disk comes with a licence which anyone who wants to use the Installer can sign and send off the the States – there's no fee involved. There is full documentation for developers included in the package, so this distribution is all you need to create installer scripts for your programs.

Distributing the *Installer* isn't as useful as distributing *AmigaGuide,* but even so it's a good move on Commodore's part. Every Amiga owner should get hold of Fish disk 870 and install *AmigaGuide,* and everyone with a hard disk should make sure to install the *Installer.*

Once again... thanks, Commodore!

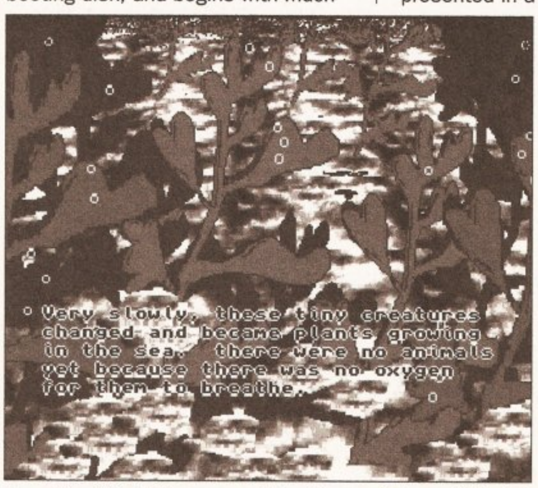
Program rating 10/10

HOW THE WORLD BEGAN

PD-Soft disk V1042

This is a slideshow aimed, according to authors JX Studios, at five to ten year olds. It describes (surprise, surprise) how the Earth was formed. If you're a fundamentalist Christian or otherwise fervent Creationist, switch off now – we're talking boiling clouds of gas, not two people with no navels wandering around in a garden.

The slide show is on a self-booting disk, and begins with much grinding of the disk – I suspect that great quantities of the images are being loaded at the start, because from then on moving from slide to slide is fairly rapid. However, you do often see a blank Workbench screen for a second before the next slide is drawn – it might have been more elegant to perform some kind of fade between the two.



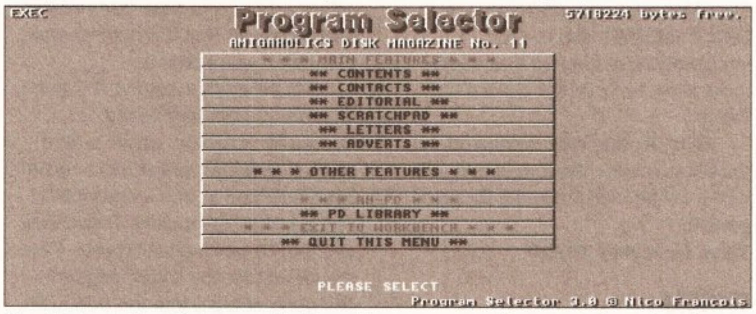
How The World Began explains the evolution of life for five to ten year olds. Would you Adam and Eve it?

The image quality is pretty good, although some of the screens are better than others. The text is reasonable, and all in all it's probably worth taking a look at this disk if you want to give your kids a basic introduction to things – as long as you're prepared to go into more detail later, since by necessity such a slideshow can only scrape the surface of the subject.

Value for money 6/10

AMIGAHOLICS DISK MAG 11

The Amigaholics magazine is a fairly long-lasting affair; this is issue 11, although issue 12 will be out by the time you read this. As of issue 11,



The Amigaholics disk magazine's main screen – well-presented, and well written. (That's the mag, not the screen. Well, that too... Can I start again?)

the magazine has "gone 2.0" – although most of it will still be readable if you're still using Workbench 1.3, the editor is strongly recommending that you upgrade, since almost all the software included on the disk requires Workbench 2.0 or above.

The magazine contains the usual mix of editorial, reviews, jokes, letters, "pen pals" and so on. It's presented in a clean, neat style; all text is displayed using *MuchMore* after having been decompressed via *PowerPacker,* and the main menus are created using Nico Francois' *Program Selector,* which is very popular with disk mags.

Since the Amigaholics magazine comes on one disk, there isn't much room for extra software, but if you have any interest in your machine and other users there's still more than enough there to keep you interested.



FileMaster: just one of the disk utilities on PD-Soft disk V1061. They range from a back-up utility and a formatter to an improved disk-click fixer.

The editor of the magazine, Kevin Bryan, also runs a free PD library for members of the Amigaholics club. The library currently has a little over 600 disks, and members can just send blank disks plus postage to obtain the software that they want.

• For details of how to take out a subscription to Amigaholics, send an SAE to Kevin Bryan, 49 Coutts House, Charlton Church Lane, Charlton, London SE7 7AS.

DISK UTILITIES

PD-Soft disk V1061

This is a collection of more or less useful disk manipulation tools; although you probably won't want to use them all, there's bound to be at least one or two programs there that you consider useful.

The contents are:

• *ABackup:* a disk backup utility which I've reviewed before in these pages.

• *Disk master* – A disk, file and directory manipulation program (it says here – it crashed my Amiga).

• *Executive* – Lists all the files and directories on your hard drive. It can compare several directories to find duplicate or changed files.

• *FileMaster* – A file editor which enables you to examine and alter individual bytes of any file.

• *Formatter* – A faster format command, written by Olaf Barthel.

• *TrackSalve* – An improvement to the **Trackdisk** device; includes routines to stop disks clicking, fix **Trackdisk** bugs and recover individual damaged tracks.

• *Validate* – Forces a disk to be validated by the Amiga.

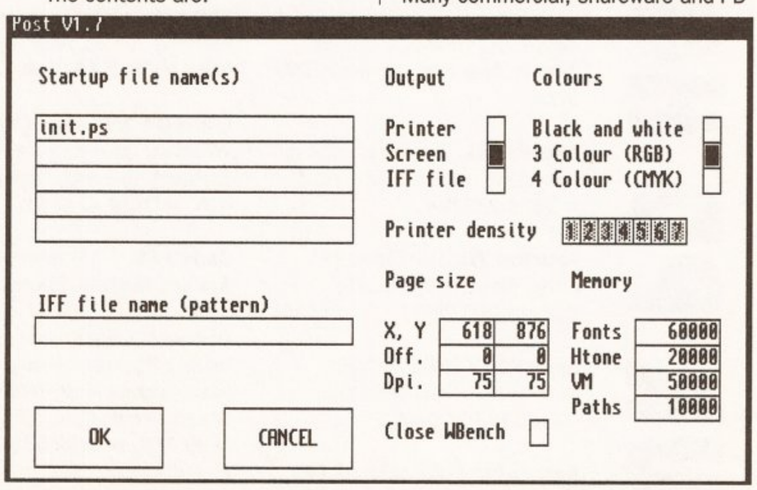
Value for money 8/10

DESKTOP PUBLISHING

PD-Soft disk V1062

This is another of the "package" disks that PD-Soft tend to put together; and this one is of particular interest to *Professional Page* DTP'ers. It contains enough useful utilities that anyone with *Pro-Page* should get hold of a copy – one of the sets of programs, the font converters, could save you serious money!

• *ConvertAFM* – A font utility which creates **.metric** files from AFM files. Many commercial, shareware and PD



Post, the software PostScript interpreter on PD-Soft disk V1062, for DTP users. If you use ProPage, it's worth getting for the font converters alone.

PostScript Macintosh fonts come with AFM files, although you may find that some PD font designers don't bother supplying them. The program takes account of kerning information, too. There are hundreds of high quality PD and shareware Mac fonts available, so you'll soon see a massive increase in your *Professional Page* font library if you trawl the bulletin boards or Internet.

• *MacFont*, by Rico Mariani – Converts Mac FONT or NFNT resources to Amiga screen fonts. This won't give you outline-quality characters, but it's the next best thing – especially if there are large Mac bitmaps in the file, because when these are scaled down the effective resolution increases.

• *UnSIT* – *StuffIt* is the de facto standard Macintosh file compression package (the only other to rival it is *Compact Pro)*. You can tell *StuffIt* files because they almost always have the **.sit** extension – which is where this program gets its name. *UnSIT* simply decompresses *StuffIt* files on your Amiga – no more decompressing on the Mac and then passing the files over a bit at a time, via PC disks!

• *ISOLatin1* – A keymap for people who are using Mac screen fonts on the Amiga. It uses the [Control], [Alt] and [Shift] keys to simulate the Mac keymap – giving you access to all the special characters that Mac owners get by using the [Option] key on their keyboards. Without this keymap, many of the font characters wouldn't be available from the standard Amiga keyboard.

• *Post* – A software PostScript interpreter. It sends output to the screen, printer or an IFF file.

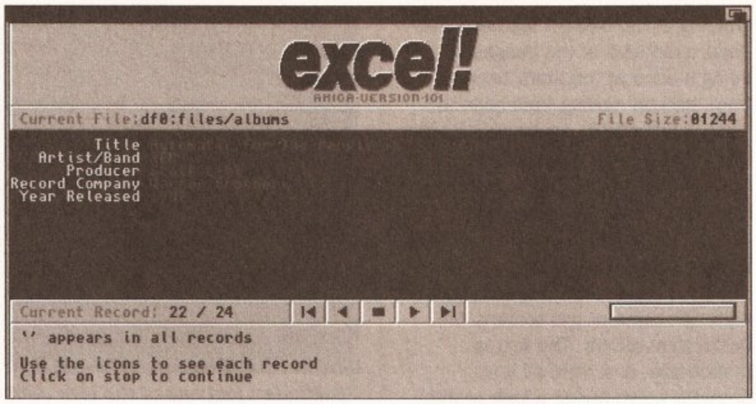
• Calendar templates for the *PageStream* DTP package. Just how useful these will be depends, of course, on whether you have *PageStream* – and whether, if you do, you want to print calendars from it!

• *Lubalin* – a PageStream font.

The disk contains a number of text files detailing just what you should do to create fonts on your Amiga from Mac versions, and also how to send PostScript files to an imagesetting bureau so that they're most likely to be in the correct format.

All in all, this disk represents excellent value – the font converters alone will be indispensable for many people.

Value for money 10/10



***Excel* – not exactly the best database program available for the Amiga... and definitely not to be confused with the high-end spreadsheet from Microsoft.**

EXCEL!

PD-Soft disk V1052

According to the documentation, this program was originally written on the PC as "a card-file database for use in libraries to keep track of the lending and retrieving of books." What it's ended as, though, is a database which might have some nice graphics, but which is about as basic as I've seen this year.

To be honest, it's difficult to pick much that I can be positive about in this program. There seems to be little bug-checking, it's not particularly easy to use, the colour scheme seems to have been picked specifically so that it's hard to read the data... you name it.

The program's author, R Sutcliff, is part of a company called Raspberry Graphics, which is also producing clip-art which looks like it's been scanned in from conventional images at a high quality. These look like they're worth checking out – but I'm afraid that the *Excel!* program has gone straight into the trash. Oh, and I'd change the name if I were Mr Sutcliff – Microsoft might not be too keen on a computer program called *Excel*, given that it's a registered trademark for the company's best-selling spreadsheet!

Value for money 2/10

3D VECTOR OBJECTS

PD-Soft disk V1067

This disk contains a number of 3D vector objects created in the *Sculpt* program; they are supplied both as IFFs and also as *Sculpt* "scenes", for use if you have the program. They're all fairly impressive in themselves, although there's nothing really spectacular included. As an example of what 3D programs can do, I've seen far better, but if you want, say, a set of US-style traffic lights ready-drawn for inclusion in your own *Sculpt* scenes, this might save you some time.

Value for money 4/10

GRAPHICS DISK

PD-Soft disk V1059

Guess the subject of this collection of programs...

• *Mpath* – Described as a "graphics toy", this program creates some seriously cool images reminiscent of galaxies and nebulas. It's based on the Mandelbrot set, but the graphics it creates are nothing like a standard Mandelbrot image. Certainly worth checking out for any Chaos freaks.

• *RayShade* – Don't even think about using this program unless you're fairly techie. It's a raytracing application which reads in an ASCII file describing the scene to be rendered, and produces a *Utah Raster* RLE-format file of the results.... Well, I did say you shouldn't think about it unless you

UK PD HOUSES

***An asterisk by a library's name means see its advert in this issue for further details.**

A1200 Only PD. Contact B J Cowdall, 27 Pheasant Way, Cirencester, Glos. GL7 1BJ.

AMOS PD, 1 Penmynydd Road, Penlan, Swansea, SA5 7EH.

Amiganuts United, 1 Daffern Avenue, New Arley, Coventry CV7 8GR.

***Anglia PDL,** 30 Victoria Street, Felixstowe, Suffolk, IP11 7EW, ☎ 0394 283494.

Armchair PD, 180 Blackton Close, Newton Aycliffe, Co Durham DL5 7EY.

Astro PD, 3 Skiddaw Court, Nunthorpe, Middlesbrough, Cleveland TS7 0RD.

Batty's PD. Contact Ian or Lynn Battison, 7 Denmark Road, Northampton NN1 5QR ☎ 0604 22456. Life membership £3.99.

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BG PD, 6 Peter Street, Whitehaven, Cumbria CA28 7QB.

Blitterchips, Cliffe House, Primrose Street, Keighley, BD21 4NN, ☎ 0535 667469.

C and C PD. Contact Chris Wildman, 3a The Cedars, Tilehurst, Reading, Berks. RG3 6JW, ☎ 0734 411131.

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CP PD, 3 Dunedin Crescent, Winshill, Burton on Trent, Staffs. DE15 0EJ, ☎ 0283 516736.

Crazy Joe's, 145 Effingham Street, Rotherham, South Yorks, S65 1BL, ☎ 0709 829286.

Deja Vu, 7 Hollinbrook, Beech Hill, Wigan WN6 7SG, ☎ 0942 495261.

Diskovery PD, 108 The Avenue, Clayton, Bradford, W. Yorks. BD14 6SJ, ☎ 0274 880066.

Essex Computer Systems, 118 Middle Crockerford, Basildon, Essex, SS16 4JA, ☎ 0268 553963.

Eurodisk PD, PO Box 2, Radlett, Herts WD7 8QL.

***Express PD,** 47 Aberdale Road, West Knighton, Leicester LE2 6GD, ☎ 0533 887061.

George Thompson Services, Bridgegate Centre, Martinfield, Welwyn Garden City, Herts. AL7 1JG, ☎ 0707 391389.

***GVB PD,** 43 Badger Close, Maidenhead, Berks. SL6 2TE, ☎ 0831 649386.

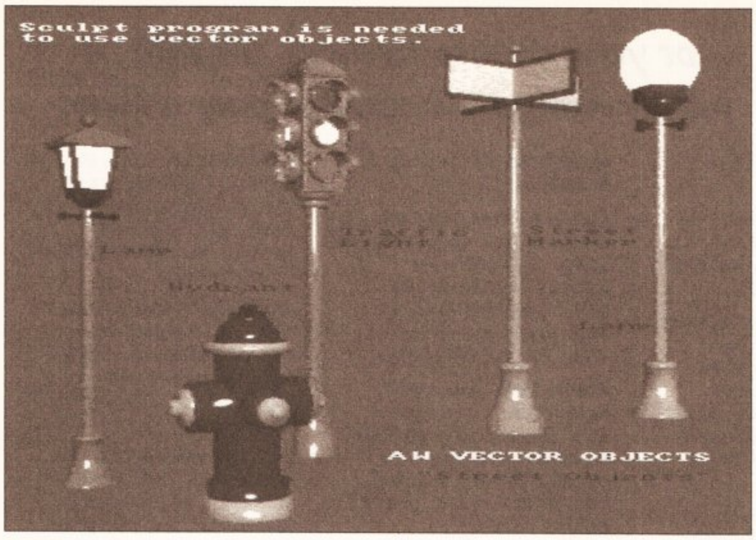
Highland PD. Free list contains lots of education, business and games disks. Contact David Paulin, 255 Drumrossie Avenue, Inverness IU2 3SX ☎ 0463 242431.

Hornesoft PD. Contact Chris Horne, 23 Stanwell Close, Wincobank, Sheffield S9 1PZ, ☎ 0742 422000.

ICPUG, PO Box 1309, London, N3 2UT, ☎ 081-346 0050.

Kew=II Collection, PO Box 627, South Croydon, Surrey CR2 9YS, ☎ 081 657 1617.

***KT's PD.** 75 The Drive, Rochford, Essex SS4 1QQ, ☎ 0702 542536.



One of the 3D scenes on PD-Soft disk V1067 – just the thing for incorporating into your own Sculpt scenes when you want that New York street feel!

know what you're doing!

• *SimGen* – Displays a two- or four-colour IFF picture behind the Workbench. Unfortunately, the program refused to open most of the supplied images – which rendered the whole thing rather pointless (the only one it would open was hideous, and made using the Amiga impossible).

• *Roses* – Draws "sine roses", otherwise known as graphs of the polar equation **r=sin(n*d)** for different *n,d*. It's vaguely cute, but not exactly Earth-shattering.

All in all, this is another disk which has a couple of possibly good programs (I'm sure *RayShade* would become comprehensible if only I had a year or two to experiment...) and a fair amount of "filler". Probably not worth bothering with, overall, unless I've mentioned something there that makes you think it's what you've been waiting half your life for.

Value for money 6/10

PARBENCH

PD-Soft disk V1055

I must come clean right away and confess that I haven't tried out the programs on this disk. That's because I only own one Amiga, and *ParNet* is a method of connecting two machines up to form a mini-network, using only a parallel cable and some freely-distributable software. Anyway, this disk was created by Vernon Graner to simplify the whole thing – he claims that it took him hours to get the network up and running using only the documentation that came with the original package, and I can well believe it.

Vernon's instructions are simple to follow, and the disk contains all the software you'll need. There's also a description of how the cable should be wired up – get it wrong at your peril! Basically, Vernon has written some installation scripts so that whatever your configuration, you should be able to get the network up and running easily.

If you have two Amigas and you want to network them – for example, to share one hard disk between the two machines, or to connect an Amiga to a CDTV and use the latter as a simple CD-ROM drive – this is probably the disk to get, rather than the original distribution version.

Value for money 8/10 AS

WHERE TO GET IT

There are two main ways to get hold of Amiga PD and shareware: from a bulletin board or from a PD library.

The advantage of using a bulletin board (BBS) is that often the latest software is uploaded as soon as it's available. On the downside, you need a modem to connect, and you'll have to pay phone charges (and sometimes a connection fee to the BBS as well).

There is a growing number of BBSs with a wide range of Amiga software available for download. Check out 01-for Amiga (071 377 1358) and the Cheam Amiga Bulletin Board (081 644 8714). Another good option is joining CIX (the Compulink Information eXchange), which not only has Amiga software but also contains conference and file areas on a wide range of subjects. Many of the *Amiga Shopper* writers have accounts on CIX, so you can get first-hand advice on your problems, too. For more details, call CIX on 081 390 8446 (voice) or 081 390 1255 (modem).

If you don't want to use a BBS or haven't got a modem, the other way to get PD software is from a PD house. Many advertise in *Amiga Shopper*, and there's a full directory below. Expect to pay between 99p and about £2.50 per disk – there's often a discount if you buy in bulk, too. As for the difference between companies which charge 99p and those which charge £2.50 – well, try both types. There are brilliant, totally professional PD houses which charge less than a quid, and total incompetents which charge more than twice that.

UK PD HOUSES

Langham PD. Contact Richard Payne, 89 Wolverhampton Road, Codsall, Wolverhampton WV8 1PL

Logic PD, 8/5 Glenalmond Court, Sighthill, Edinburgh EH11 4BE.

Mythril PD, PO Box 68, Romford RM6 6LY.

NBS, 1 Chain Lane, Newport, Isle Of Wight, PO30 5QA, ☎ 0983 529594.

Numero Uno. Contact Dillon Eyre, 21 Burstall Hill, Bridlington, N Humberside YO16 5NP, ☎ 0262 671125.

Orbital Software. Contact A Flowers, 37 The Orchard, Market Deeping, Peterborough, Cambs. PE8 8JR, ☎ 0778 342064.

Pathfinder PD, 41 Marion Street, Bingley, W Yorks. BD16 4NQ, ☎ 0274 565205.

***PD Soft,** 1 Bryant Ave, Southend-on-Sea, Essex, SS1 2YD, ☎ 0702 466933.

Riverdene PDL, 30a School Road, Tilehurst, Reading, Berkshire RG3 5AN, ☎ 0734 452416.

Roberta Smith DTP, 190 Falloden Way, Hampstead Garden Suburb, London NW11 6JE, ☎ 081 455 1626.

Sector 16, 160 Hollow Way, Cowley, Oxford, ☎ 0865 774472.

Seventeen Bit Software, PO Box 97, Wakefield, West Yorks WF1 1XX, ☎ 0924 366982.

Softville, 35 Market Parade, Havant, Hants PO9 1PY ☎ 0705 498199

Software Expressions, Unit 4, 44 Beauley Road, Southville, Bristol BS3 1PY, ☎ 0272 639593.

Startronics, 4 Arnold Drive, Droylsden, Manchester M35 6RE, ☎ 061 370 9115.

Tazmania PD. Contact M Hewson, 4 Boultham Avenue, Lincoln LN5 7XZ, ☎ 0522 538706 (after 6 pm).

Telescan Computer Services, Handsworth Road, Blackpool FY5 1SB, ☎ 0253 22296.

***Trevan Designs Ltd,** PO Box 13, Aldershot, Hants. GU12 6YX, ☎ 0483 725905 (note: modem line, not voice).

Vally PD, PO Box 15, Peterlee, Co Durham SR8 1NZ, ☎ 091 587 1195.

Virus Free PD, 31 Farringdon Road, Swindon, Wiltshire SN1 5AR ☎ 0793 512321

***Visage Computers PDL.** 18 Station Road, Ilkeston, Derbyshire DE7 5LD, ☎ 0602 444501.

BUYER BEWARE: inclusion in this directory does not imply that *Amiga Shopper* endorses or recommends any PD library in any way.

When you write to any of these libraries for a catalogue, include an SAE for its return. Some libraries ask that you send a blank disk as well.

If a library is named in a review, this means that that library provided us with the disk reviewed. Given that PD can be freely copied, the same program may well be available legitimately from several libraries.

• If you run a PD library not listed here and wish to be included, or if you want to amend any information given, send full details and a copy of your latest catalogue to: **PD Directory, *Amiga Shopper*, 30 Monmouth Street, Bath, Avon BA1 2BW.**

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Superpic Digitiser, Genlock and software £400. ☎ Alan 081 764 0298

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20 printers reviewed PLUS beginner's Amiga guide. £3

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How to fit a hard drive to an A600 or A1200. COVER DISK: Alert translates guru numbers, Cycle To Menu creates pop-up menus, Kwikbackup copies hard drive to floppies, LhA archiver, ReqTools creates requesters, SnoopDOS gives info on programs, Virus Checker, plus a complete assembler and linker package. £4

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PRODUCT LOCATOR

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Welcome to the *Amiga Shopper* Buyer's Guide, your regular guide to what's hot and what's not in the Amiga market place. It's designed as a simple-to-use yet comprehensive guide which will help you to make the right buying decisions. It may not include each and every product ever produced for the Amiga (that would take up virtually the whole of *Amiga Shopper!*), but rest assured that all the major brands are here. The Buyer's Guide will run each and every month and as new products are released and others discontinued, we'll be updating it accordingly. This month we're concentrating on commercial software packages. Next month it's public domain.

PAINT PROGRAMS

Product	Supplier	Price	Screen Modes	Max Colours	Overscan	Animation	Rating	Issue
Deluxe Paint 4	Electronic Arts	£90	L/LI/M/H	4096	Yes	Yes	*****	10
Deluxe PhotoLab	Electronic Arts	£130	L/LI/M/H	4096	Yes	No	***	2
DigiPaint 3	Silica Systems	£80	L/LI	4096	Yes	No	****	2
The Graphics Studio	Accolade	£50	L/M	32	No	No	***	2
Personal Paint	MicroPACE	£59.95	L/LI/M/H/S/A	262,000	Yes	Yes	****	26
Photon Paint 2	MicroIllusions	£90	L/LI	4096	Yes	Yes	*****	2
SpectraColour	HB Marketing	£60	L/LI	4096	Yes	Yes	***	5

L = Low-Res, LI = Low-Res Interlaced, M = Medium, H = High-Res, S = Super Hi-Res, A = AGA

ANIMATION SOFTWARE

Product	Supplier	Price	ANIM Compat	Onion Skin	X-Sheet	Sound	Rating	Issue
Disney Animation Studio	Silica	£80	Yes	Yes	Yes	Yes	****	1
MovieSetter	Silica	£80	No	No	No	Yes	****	14,23
Take-2	Rombo	£95	No	No	Yes	Yes	****	14

SOLID MODELLING / RAY-TRACING

Product	Supplier	Price	Ray Tracing	24-bit	Animation	Bump Maps	Textures	Rating	Issue
Aladdin 4D	MicroPace	£260	No	Yes	Yes	No	Yes	***	25
Draw 4D	Surface UK	£150	No	No	Yes	No	Yes	***	7
Expert 4D Junior	Genisoft	£39.95	Yes	No	No	No	Yes	****	21
Imagine	Silica	£235	Yes	Yes	Yes	No	Yes	*****	4,7,20
Imagine 2	Computech	£270	Yes	Yes	Yes	Yes	Yes	****	14
RayDance	Radiance	£100	Yes	Yes	No	Yes	Yes	***	14
Real 3D 1.4	Alternative Image	£120	Yes	Yes	Yes	Yes	Yes	*****	4,7,20
Sculpt 4D	Alternative Image	£400	Yes	Yes	Yes	No	Yes	*****	7
3D professional	Marcam	£260	Yes	Yes	Yes	No	Yes	***	7

MISC. GRAPHICS

Product	Supplier	Price	Type	Rating	Issue
CineMorph	Silica	£99.95	Morphing program	****	23
FlightPaths	Meridian	£49.95	Animation effects for DPaint	****	26
Genesis	MicroIllusions	£50	Fractal Landscapes	****	11
MakePath	Meridian	£24.99	Animation editor for VistaPro	****	26
Morph Plus	MicoPace	£180	Morphing program	****	23
Terraform	Meridian	£34.99	Landscapes editor for VistaPro	****	26
VistaPro	Meridian	£100	Fractal Landscapes	*****	7

IMAGE PROCESSORS

Product	Supplier	Price	24-bit	Max Colours	File Formats	Composition	Colour Control	Rating	Issue
Art Department	Silica	£100	Yes	16.7 m	Many	No	Yes	N/A	–
Art Department Pro	Silica	£200	Yes	16.7 m	Many	Yes	Yes	*****	10
ImageFX	Silica	£269.95	Yes	16.7 m	Many	Yes	Yes	****	27
ImageMaster	Amiga Ctr Scot.	£175	Yes	16.7m	IFF	Yes	Yes	*****	18

PAGE LAYOUT PACKAGES

Product	Supplier	Price	Outline Fonts	Pantone	Postscript	24-bit Col	Colour Sep	Rating	Issue
CityDesk	Precision	£130	No	No	Yes	No	No	N/A	–
PageSetter 2	Silica	£100	Yes	No	No	No	No	N/A	–
PageStream 2.2	Silica	£200	Yes	No	Yes	Yes	Yes	***	2,3
ProPage 4	Silica	£199.95	Yes	Yes	Yes	Yes	Yes	*****	27
Saxon Publisher	Surface UK	£250	Yes	No	Yes	Yes	Yes	***	17

STRUCTURED DRAWING PROGRAMS

Product	Supplier	Price	Bezier Curves	Postscript	Outline Fonts	EPS compat	Rating	Issue
Art Expression	Silica	£150	Yes	Yes	Yes	Yes	****	24
DesignWorks	Silica	£100	Yes	Yes	Yes	No	N/A	–
ProDraw 3.0	Silica	£132	Yes	Yes	Yes	Yes	****	20

CAD PACKAGES

Product	Supplier	Price	DXF Compat	No. Of layers	Vector Fonts	PostScript	Rating	Issue
DynaCADD	ExpressWorks	£650	Yes	256	Yes	Yes	****	3
UltraDesign	Marcam	£200	Yes	128	Yes	Yes	N/A	–
X-CAD 2000	Digital Multimedia	£129	Yes	255	Yes	With util included N/A	–	
X-CAD 3000	Digital MultiMedia	£300	Yes	255	Yes	With util included N/A	–	

UTILITIES

Product	Supplier	Price	Type	Rating	Issue
Ami-Back 1.4	Omega Projects	£50	Hard Disk Backup	*****	9
Director 2	Alternative Image	£100	Video Presentation scripting language	***	19
Directory Opus 4	Silica	£64.95	Directory utility	*****	28
DOS Lab	GTS	£19.99	AmigaDOS help disk	***	26
Essence	Apex Software	£80	Algorithmic textures for Imagine 2	****	20
Flow 3.0	Silica	£80	Ideas Processor	***	10
GB Route Plus	Complex Computers	£80	Journey Planner	*****	10
GB Route Plus Edit	Complex Computers	£30	Editor For GBRoute	****	10
Hit Kit!	Gajits	£25	Sequences for Sequencer One	***	16
Home Office 2	Gold Disk	£99	Integrated applications software	*****	20
HotLinks	Silica	£70	Add on for PageStream 2.2	**	16
MapMaster	Alternative Image	£54	Image Mapping package	****	14

PRODUCT LOCATOR

Product	Supplier	Price	Type	Rating	Issue
PowerWaves 3.1	Database	£17.95	Create wave-based 3D objects	****	21
Real Things	Living Data	£29.95	Animated animal brushes for DPaint	****	20
Reverser	Alternative Image	£10	Animation Utility	****	17
SaxonScript	Surface UK	£100	Postscript interpreter	***	15
Shades	Meridian Software	£60	Gradient fills for PageStream	**	16
Smooth Talker	Zen Computers	£140	Video Prompting package	****	16
SurfaceMaster	Alternative Image	£28	Add on for Imagine	****	14
Touch Typist	Sector Software	£14	Teach yourself touch typing	****	15
TypeSmith	Soft Logic	£135	Outline font editor	*****	26

WORD PROCESSORS

Product	Supplier	Price	Spell Checker	Thesaurus	Picture Import	Rating	Issue
Excellence 3	HB Marketing	£79.95	Yes	Yes	Yes	****	25
Final Copy 2	Gordon Harwood	£100	Yes	Yes	Yes	****	25
KindWords 3.0	Silica	£80	Yes	Yes	Yes	**	25
Mini Office 2	Europress	£69	Yes	NO	No	****	17
Pen Pal	Harwoods	£80	Yes	No	Yes	****	6,9,25
Personal Write	MicroPace	£30	No	No	No	*	25
ProWrite 3.2	Silica	£143	Yes	Yes	Yes	***	12
Protext 5.5	Arnor	£150	Yes	Yes	No	*****	6,9,25
Word Perfect	Sentinel	£230	Yes	Yes	No	N/A	–
Wordworth 2	Digita	£129.95	Yes	Yes	Yes	****	21,25

DATABASES

Product	Supplier	Price	Type	Programmable	dBASE Compatible?	Rating	Issue
InterBase	InterActivision	£29.95	Card Index	No	Yes	****	26
ProData 1.2	Arnor	£100	Card Index	No	Yes	****	9
Mini Office 2	Europress	£69	Card Index	No	No	***	17
SuperBase	Precision	£30	Relational	No	Yes	****	9
SuperBase 2	Precision	£100	Relational	No	Yes	****	9,12
SuperBase Pro 4	Precision	£400	Relational	Yes	Yes	*****	4,9

SPREADSHEETS

Product	Supplier	Price	Lotus Compatibility	Graphs	Rating	Issue
Advantage	Silica	£100	Yes	Yes	****	1,9
DGCalc	Digita	£40	No	No	N/A	–
K-Spread 3	Kuma	£70	Yes	Yes	***	9
K-Spread 4	Kuma	£100	Yes	Yes	****	9
Mini Office 2	Europress	£69	No	Yes	***	17
ProCalc	Silica	£150	Yes	Yes	N/A	–

MULTIMEDIA

Product	Supplier	Price	Interactive	External Drivers	ARexx	Rating	Issue
AmigaVision	Commodore	£80	Yes	Yes	Yes	N/A	–
CanDo 1.5	Checkmate Digital	£130	Yes	No	Yes	N/A	–
HyperBook	Silica	£100	Yes	No	Yes	****	6
Viva!	MicroDeal	£200	Yes	Yes	No	N/A	–

VIDEO TITLERS

Product	Supplier	Price	Overscan	Transitions	Amiga Fonts	Horiz Crawl	Rating	Issue
Alternative Scroller	Alternative Image	£50	Yes	No	No	Yes	N/A	–
Scala 1.1	Silica	£250	Yes	Yes	Yes	No	*****	2
Scala 500	Silica	£100	Yes	Yes	Yes	No	N/A	–
Scala MM200	Scala UK	£395	Yes	Yes	Yes	Yes	*****	21
Video Caption Designer	Maze	£200	Yes	No	Yes	Yes	***	3
Video Ease	Interactive Tchnlgy	£40	Yes	Yes	Yes	Yes	**	11

DESKTOP VIDEO UTILITIES

Product	Supplier	Price	Type	Rating	Issue
Adorage	MicroPace	£79.95	Video Effects System	****	24
AntiA	Zen	£40	Font Enhancer	****	8
Deluxe Video 3	Electronic Arts	£100	Presentation System	N/A	–
Elan Performer 2	Silica	£180	Presentation System	****	11
ShowMaker	Silica	£250	Presentation System	***	10

MIDI SEQUENCERS

Product	Supplier	Price	No. of Tracks	Amiga Smpls	Song Arrange	Rating	Issue
Sequencer One	Gajits	£90	20	Yes	Yes	****	2
Bars&Pipes Pro	Zone	£200	Unlimited	Yes	Yes	*****	3
Pro-24	Evenlode	£300	24	No	Yes	***	4
KCS 3.5	Zone	£280	48	Yes	Yes	*****	8
Tiger Cub	Zone	£100	12	Yes	Yes	****	–
Music-X	MicroIllusions	£150	256	Yes	No	****	–
Music-X Junior	MicroIllusions	£50	256	Yes	No	****	–
Master Tracks	MCM	£200	64	No	Yes	***	–
Trax	MCM	£70	64	No	Yes	*****	–
Sequencer One Plus	Gajits	£50	32	Yes	Yes	****	16

MISC MIDI SOFTWARE

Product	Supplier	Price	Type	Rating	Issue
Dr T Boom Box	Zone	£45	Music for morons	***	21
X-Or	Zone	£220	Librarian	****	6
CMPanion	Gajits	£100	Patch Editor	****	6
Caged Artist	Zone	£100	Patch Editor	***	6
Copyist Apprentice	Zone	£100	Score Notation	****	–
Copyist DTP	Zone	£230	Pro Score Notation	****	–
Audio Sculpture	SMG	£50	Sample Sequencer	**	12

PRODUCT LOCATOR

Product	Supplier	Price	Type	Rating	Issue
Quartet	MicroDeal	£50	Sample Sequencer	***	–
Mugician	**Thalamus**	**£30**	**Sample Sequencer**	***	–
OctaMED 5	Seasoft Computing	£30	Sample Sequencer	*****	–
SuperJAM!	**Blue Ribbon Sound.**	**£100**	**Algorithmic Composition**	****	**15**

EDUCATIONAL SOFTWARE

Product	Supplier	Price	Type	Rating	Issue
MicroFrench	LCL	£24	Language Tutor	****	17
Learn to Read With Prof	**Prisma**	**£25**	**Reading**	***	**2**
The Three Bears	School Software	£23	Reading	***	2
Donald's Alphabet Case	**Entertainments Int.**	**£25**	**Reading**	***	**2**
Let's Spell	Softstuff	£20	Writing	***	2
Things To Do With Words	**Softstuff**	**£20**	**Writing**	***	**2**
Kids Type	GeniSoft	£25	Writing	****	2
Mickey's Zoo	**Entertainments Int.**	**£25**	**Maths**	***	**2**
Game, Set & Match	GeniSoft	£21	Maths	**	2
Magic Maths	**School Software**	**£23**	**Maths**	***	**2**
Fun School 3	Europress	£25	3 'R's	*****	2
Fun School 4	**Europress**	**£25**	**3 'R's**	*****	**9**
Puzzle Book 1	Softstuff	£20	3 'R's	****	2
Sesame Street	**Merit Software**	**£16**	**Painting**	***	**2**
Play It Safe	Deja Vu	£3.50	General	***	2
Pick A Puzzle	**Deja Vu**	**£2.50**	**Jigsaw**	****	**2**
Hooray For Henrietta	Sketlander	£25	Maths	***	2
Spell!	**Europress**	**£9**	**Writing**	***	**3**
Maths Blaster Plus	Ablac Computec	£40	Maths	***	3
Maths Mania	**School Software**	**£23**	**Maths**	***	**3**
Better Spelling	School Software	£23	Writing	****	3
Answer Back Quiz	**Kosmos**	**£20**	**3 'R's**	****	**3**
Weather Watcher	GeniSoft	£25	Weather	***	4
What Is It?	**GeniSoft**	**£20**	**Geography**	****	**4**
Better Maths	School Software	£23	Maths	***	4
French Mistress	**Kosmos**	**£20**	**French**	****	**4**
Early Learning Maths	ESP Software	£20	Maths	****	6
SpellCopter	**ESP Software**	**£20**	**Writing**	****	**6**
Spell Book	SoftStuff	£8	Writing	****	6
Cave Maze	**Coombe Valley**	**£12**	**Quiz**	***	**7**
Maths Dragons	Coombe Valley	£12	Maths	***	7
Shapes & Colours	**Rainbow**	**£8**	**Basic**	****	**7**
First Letters	Rainbow	£8	Reading	***	7
Reasoning With Trolls	**Coombe Valley**	**£15**	**Quiz**	****	**8**
Spellbound	Lander Software	£26	Writing	****	10
Count & Add	**Lander Software**	**£26**	**Maths**	****	**10**
Pepe's Garden	Prisma	£26	3 'R's	****	10
Picture Book	**Triple 'R' Education**	**£20**	**3 'R's**	*****	**10**
Money Matters	Triple 'R' Educational	£20	Money	*****	–
Maths Adventure	**Kosmos**	**£26**	**Maths**	***	**12**

PROGRAMMING LANGUAGES

Product	Supplier	Price	Language	Compiler	Rating	Issue
AMOS	Europress	£50	BASIC	Separate	*****	3,9
AMOS Compiler	**Europress**	**£30**	**Compiler**	**Yes**	****	**5,9**
AMOS Professional	Europress	£69.95	BASIC	Separate	*****	20
AMOS Tome	**Deja Vu**	**£30**	**BASIC Extension**	–	****	**11**
AMOS 3D	Europress	£30	BASIC Extension	–	*****	5,7
Easy AMOS	**Europress**	**£35**	**BASIC**	**No**	*****	**12**
Aegis Visionary	Precision	£59	Adventure	Yes	***	17
ArgAsm	**HB Marketing**	**£60**	**Assembly**	–	***	**9**
Aztec C	Precision	£130	C	Yes	****	9
Blitz	**Siren Software**	**£70**	**BASIC**	**Yes**	***	**3,9**
Devpac 3	HiSoft	£70	Assembly	–	*****	10,12
GFA BASIC 3.5	**GFA Data Media**	**£50**	**BASIC**	**Separate**	****	**3,9**
GFA Compiler	GFA Data Media	£30	Compiler	–	****	3,9
HiSoft BASIC	**HiSoft**	**£50**	**BASIC**	**Yes**	****	**9**
HiSpeed Pascal	HiSoft	£100	Pascal	Yes	****	19
Lattice C 5	**HiSoft**	**£230**	**C**	**Yes**	*****	**3,9**
M2 Amiga	Real Time	£125	Modula-2	Yes	****	7,9

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Supplier	Telephone
Ablac Computec	0626 331464
Accolade	071 738 1391
Alternative Image	0533 440041
Amiga Centre Scotland	031 557 4242
Arnor	0733 68909
Checkmate Digital	0707 664684
Cloudhall	0604 231211
Commodore	0628 770088
Complex Computers	0706 224531
Computech	0702 206165
Coombe Valley	0626 779695
Deja Vu	0942 495261
Digita	0395 270273
Digital Multimedia	0702 206165
Electronic Arts	0753 549442
Entertainments Int	0268 541212
ESP Software	0702 600557
Europress	051 357 1275
Evenlode SoundWorks	0993 898484
ExpressWorks	0252 726255
Gajits Music Software	061 236 2515
GeniSoft	0753 686000
GFA Data Media	0734 794941
Harwoods	0773 836781
HiSoft	0525 718181
Interactive Technology	0423 501321
Kosmos	0525 53942
Kuma	0734 844335
Lander Software	041 357 1659
Marcam Ltd	071 258 3454
MCM	081 963 0663
Meridian	081 543 3500
Merit Software	0101 214 385 2353
MicroIllusions	0480 496497
Omega Projects	0942 682206
Prisma Software	0244 326244
Radiance	0101 408 270 7420
Rainbow	0392 77369
Real Time Associates	081 656 7333
Rombo Productions	0506 466601
Scetlander	041 357 1659
School Software	010 353 61 45399
Seasoft	0903 850378
Sentinel	0932 231164
Silica	081 309 1111
Siren Software	061 724 7572
SMG	0274 562999
Softstuff	0732 351234
Surface UK	081 566 6677
Triple 'R' Software	0742 780370
Zone	081 7666564

BUYING ADVICE FOR SHOPPERS

Whether you're buying over the phone or at a local store, here's our advice on getting what you want.

BUYING IN PERSON

• Where possible, always test any software and hardware in the shop before taking it home, to make sure that everything works properly.
• Make sure you have all the necessary leads, manuals or other accessories you should have.
• Don't forget to keep your receipt.

BUYING BY PHONE

• Be as clear as possible when stating what you want to buy. Make sure you confirm all the technical details of what you are buying. Some things to bear in mind are version numbers, memory requirements, other required hardware or software and compatibility with your particular model of Amiga (that is, make sure you know which version of Kickstart you have).
• Check the price you are asked to pay, and make sure that it's the same as the price advertised.
• Check that what you are ordering is actually in stock.
• Check when and how the article will be delivered, and that any extra charges are as stated on the advert.
• Make a note of the date and time when you order the product.

BUYING BY POST

As with buying by phone, you should clearly state exactly what it is you are buying, at what price (refer to the magazine, page and issue number where it's advertised) and give any relevant information about your system set-up where necessary. You should also make sure you keep copies of all correspondence both to and from the company concerned.

MAKING RETURNS

Whichever method you use to buy, you are entitled to return a product if it fails to meet any one of the following three criteria:

❶ The goods must be of "merchantable quality".
❷ They must be "as described".
❸ They must be fit for the purpose for which they were sold or for the purpose you specified when ordering.

If they fail to satisfy any or all of the criteria, then you are then entitled to:
• Return them for a refund.
• Receive compensation for part of the value.
• Get a replacement or free repair.

When returning anything, ensure that you have proof of purchase and that you return the item as soon as possible after receiving it. For this reason it is important that you check as soon as it is delivered to make sure everything you ordered is there and works as it is supposed to.

HOW TO PAY

Paying by credit card is the most sensible way, whether buying in person, by post or on the phone, because you may be able to claim your money back from the credit card company even if the firm you ordered from has gone bust or refuses to help sort out your problem.

Otherwise, you should pay by crossed cheque or postal order – never send coins or notes through the mail.

GETTING REPAIRS

Always check the conditions of the guarantee, and servicing and replacement policy, so that you know what level of support to expect. Always fill in and return warranty cards as soon as possible, and make sure that you are aware of all the conditions contained in the guarantee.

BUYING PD

Even though PD software is relatively inexpensive, you should still apply the guidelines set out above, making sure that you confirm all orders as clearly as possible.

Shopping around is still important when buying PD because different sources charge different prices for the same disks. There is no set pricing structure for disks, but bear in mind that PD houses are, in theory, supposed to be non-profit-making operations. AS

BUYING BY MAIL

• Before you send any money, ring the supplier to confirm that the item you want is in stock and when the delivery is likely to be made. Enquire about returning unwanted goods and the supplier's refund policy. Find out about hidden extras like postage and packing charges, and whether the prices quoted include VAT.

• Beware of companies that do not include an address in their adverts.

• If ordering goods of more than £100 in total value, always try to use a credit card – if anything goes wrong, you will be legally entitled to claim against the credit card company, even if the retailer has gone bust. You may also get extra insurance – check with the credit card company.

• Always buy from the most recent issue of *Amiga Shopper.*

• When your order arrives, check everything carefully. If anything is missing, don't use the product at all – contact the supplier immediately. If something doesn't work, make the obvious checks such as the fuse, but don't try to fix the product.

• If a problem does arise, contact the supplier in the first instance and calmly and politely explain your problem. In most cases these things are merely a mix-up or a misunderstanding that the supplier will happily put right. If you think you have a genuine grievance that has not been resolved, you might consider contacting your local Trading Standards Officer (the number will be in the phone directory – check the local council listing).

• Always keep records of correspondence with any mail order company you deal with and also make a note of where and when you saw the product advertised. False or misleading advertising is an offence, and suppliers must stick to what they've said in adverts.

ADVERTISERS INDEX

AMIGA SHOPPER

Issue 29 – September 1993

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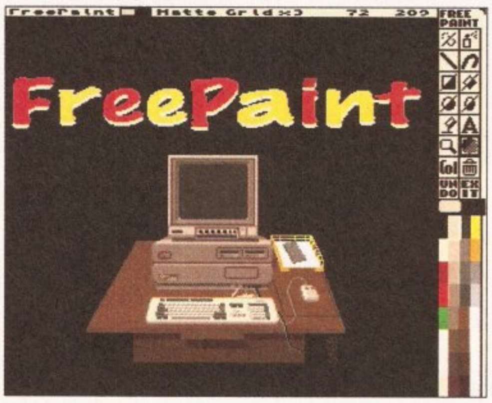
IN NEXT MONTH'S ISSUE

You don't need to spend quite as much money as Steven Spielberg to achieve stunning computer-generated video effects: we all know that Amigas can do it cheaper than just about any system. But you might be surprised to find out just *how* cheaply you can create computer-generated video.

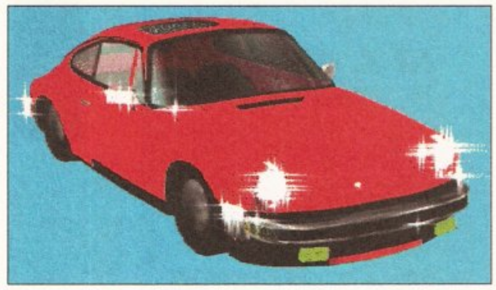
Next month's main feature is all about making videos on the cheap. If you've got an Amiga and a domestic video recorder then you're pretty much ready to make a go of it. Once you've got hold of some of the public domain and shareware packages we'll be recommending, there'll be no stopping you. In fact, you'll be amazed at how much you can do without having to spend money.

We'll also be recommending bargains in the genlocking and digitising departments. If you're on a tight budget and want to overlay Amiga graphics onto video, or grab video images into your Amiga for processing, then next month's issue is the place to look.

There won't be any skimping on hints and tips, either. Want to know how to carry out *Terminator 2* style morphing effects with public domain software



We said on a budget, and we meant it – this paint program is available in the public domain for free!



Could you be creating images like this one? Read next month's video special to discover how.

and how to remove jaggies from your lettering? Want to know which typefaces are the best for titling? Want to learn how to edit your tapes, and which monitor to use? Want to know what all the different Amiga screen formats are all about and exactly what kind of equipment you need to achieve the effects you want? All these questions, and many more, will be answered in *Amiga Shopper* 30.

There's much, much more, of course. For one thing, we'll be carrying a full review of Europress's *AMOS Pro Compiler*. We'll be putting it through its paces to see if it handles the whole gamut of AMOS code, and we'll also be checking to see if the speed increase it delivers is enough to make buying it worth your while.

Amiga Advocate returns next month, ensuring that you know your rights before you part with your hard-earned cash. Next month we'll focus on the Sale Of Goods Act and what it means for you.

And what about that review of *Deluxe Music Construction Set II* that several readers have asked after? No matter what anyone else may say, Electronic Arts tell us they haven't actually finished it yet. When the program is finally finished we'll be reviewing it (and we'll be giving away the prizes we promised, too).

Amiga Shopper 30 will be on sale on Tuesday 7 September, for £1.95. Don't miss it! AS

ARE YOU ONE OF OUR WINNERS?

The five winners from our "Copy Deadline" competition in *Amiga Shopper* 27 were: Peter Freeman of Weaverham, Cheshire; Martin Nicholson from Plymouth; D Humphries of Sutton in Surrey; Michael Adnett from Tilehurst near Reading and D Stevens of Hull. These five lucky people will each have a *Final Copy II* package winging its way to them presently – courtesy of Gordon Harwood Computers. Hearty congratulations to all of them.

AMIGA SHOPPER AT A GLANCE GUIDE

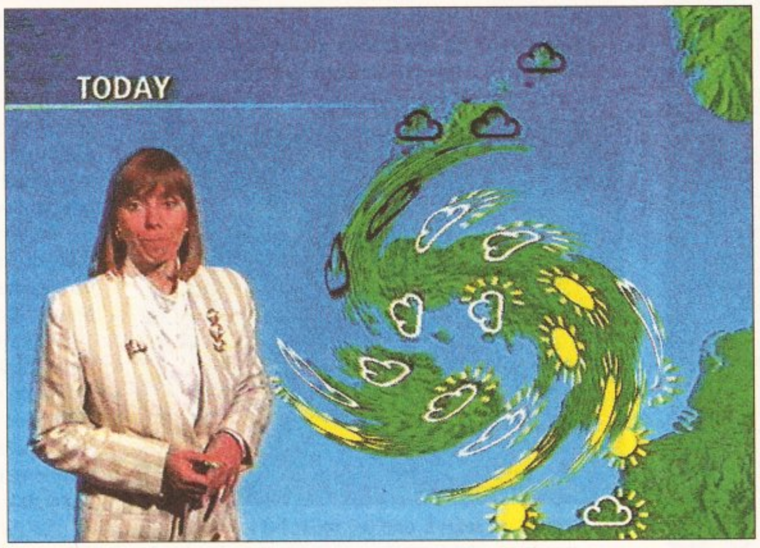
To help you find what you want quickly and easily, here is a cross-referenced list of all the products and subjects covered in this month's *Amiga Shopper*. You'll find a detailed index to the many subjects dealt with in the problem-solving *Amiga Answers* section given on page 37. The page numbers given are for the first page of the article in which the subject is mentioned.

Are there any products or subjects you'd like us to take a look at? Well, just drop a line to:

***Amiga Shopper*,**
30 Monmouth Street,
Bath, Avon BA1 2BW.

WIN • WIN • WIN • WIN • WIN • WIN

Improve your image!



Get into a twirl with the latest version of Art Department Pro – we have three copies to be won.

Want to get hold of some software that will enable you to manipulate screen images to your heart's content? Enter this month's arty competition and you could soon be the proud owner of a copy of *Art Department Pro* – a powerful image-processing package that can modify images in almost any way you can think of – colour changes, rescaling, blurring, combination effects like embossing, special effects like twirling, as well as converting picture file formats and much more.

Image processing is all about manipulating pictures to give stunning visual effects – from twists and twirls to blurs and multiple composite images. *Art Department Pro* is also ideal for those who want to enter the world of computer animation – you can use the package to record, manipulate and play a series of frames. If you're a DTP user, you'll find that *ADPro* is a handy tool for cropping and scaling images before you include them in your own pages. And the program even offers comprehensive, well-documented ARexx support. If you want the full low-down on what *ADPro* has to offer in the way of features, then check out the detailed review in *Amiga Shopper* 28.

Art Department Pro v2.3.0 is produced by ASDG in the States, and it's thanks to those nice chaps and chapesses from Wisconsin that we've got three copies of this £180 program just waiting to be won. So what do you have to do? Just answer the three questions in the box, then send your answers written on the back of a postcard (or sealed envelope), along of course with your name and address, to:

Crayon Wielders
Amiga Shopper
29 Monmouth Street
Bath BA1 2DL

The closing date for entries is Friday 10 September and the first three correct answers drawn from the editor's hat on that day win. Send only one entry per household and please state if you don't want your name included on a mailing list. AS

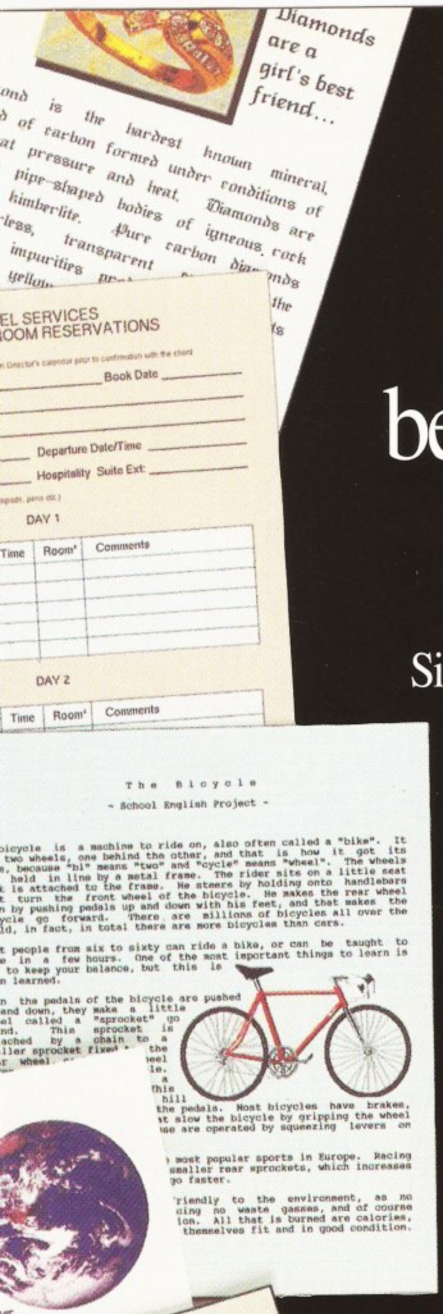
THE QUESTIONS

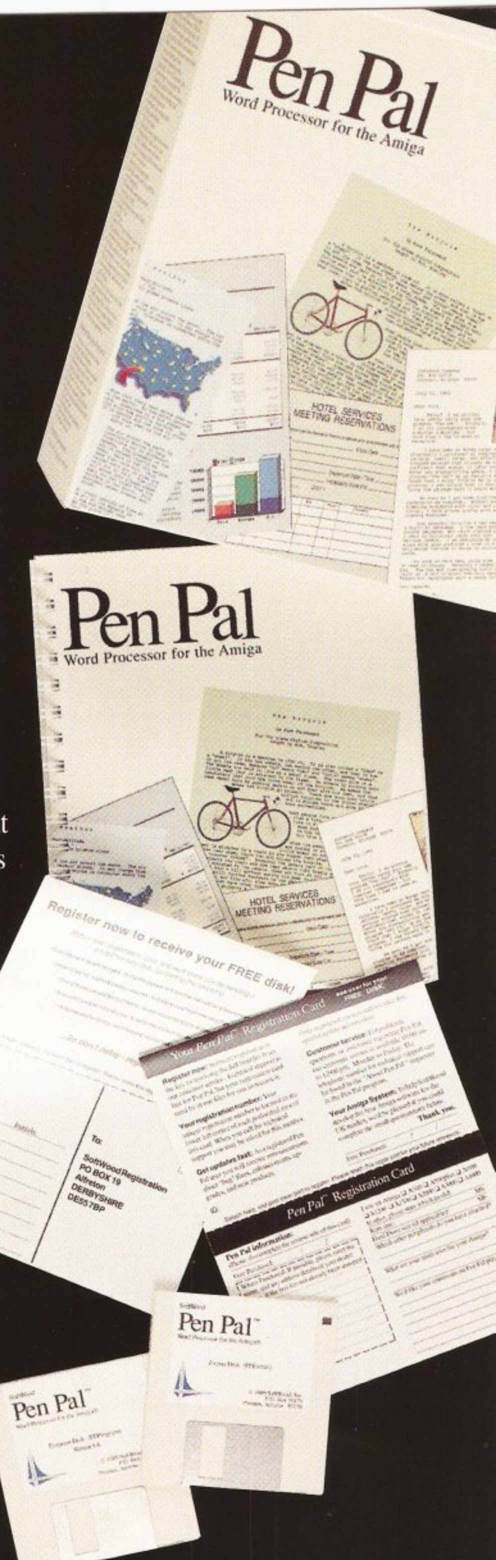
1. Which famous artist painted "The Haywain"?
(a) Hockney
(b) Constable
(c) Lichtenstein

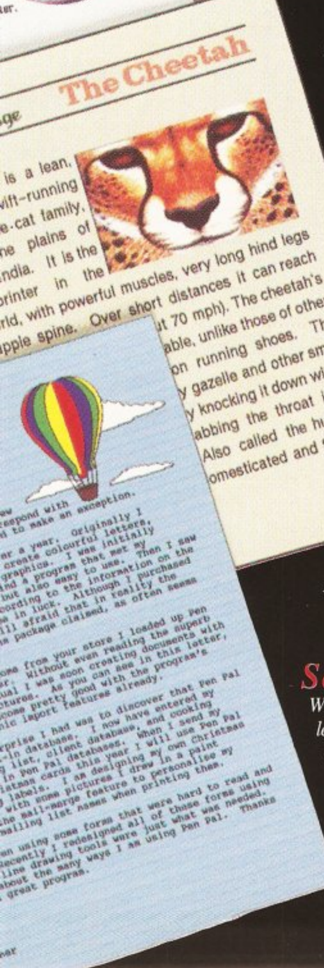
2. What is "compositing"?
(a) Placing all your garden and household rubbish into a large plastic bin and waiting until it turns smelly
(b) Using image-processing software to superimpose pictures and combine them to create a new composite image
(c) Creating musical compositions by allowing your Amiga to combine sounds randomly

3. One of *ADPro's* features is the facility to distort an image by twisting it about a fixed point. What is this called?
(a) Tweaking
(b) Twirling
(c) Pearling

WIN • WIN • WIN • WIN • WIN • WIN







The Best Selling Word Processor and Database just became even better...

VALUE!

Since its launch, Pen Pal has become the most popular package of its type

Not surprising when you consider the extensive features at your fingertips, combined with user friendly simplicity, it was bound to be a winner! In a comprehensive Word Processor test, Amiga Format commented "There is little to fault Pen Pal, it deserves to do well" - quite a prediction it seems! Format have since said that it's "Still the best value for money..." If you're not a Pen Pal user yet, we hope you soon will be, because at just £49.95... the best just became better, even better value!

Pen Pal

A superb package, with immense power, to fulfil all your Word Processing needs, and... with an integrated Database too! It's all so easy to use, you'll rarely need to refer to the extensive 250 page lay-flat spiral bound manual. Users frequently tell us that they've never found a program they get on with so well.

THE WORD PROCESSOR: You can... Open multiple documents simultaneously; search and replace; cut, copy and paste; check your spelling with a 110,000+ word dictionary; import your favourite IFF/HAM graphics, from programs such as DPaint, or Clip Art files in various sizes and colours; automatically flow text around graphics in any Workbench compatible font (there are over 200 available styles) in different sizes and colours to suit your design... Even as you type! Full Page View with position, edit and creation of graphic objects and extremely useful forms designer. All this from a word processor and... Much, Much, More! As you can see from the documents shown on the left, this is no ordinary program!

THE DATABASE: With 32 fields per record, 32,000 records per database and a fast sort of 1000 records in less than 5 seconds, this is a *real* database. Mail merging into the Word processor couldn't be simpler, with easy creation of templates for letters or reports, into which information can be merged.

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*With Pen Pal you're not just getting a one off product! SoftWood are acknowledged as the World's leading software company who develop **just** for Amiga and **no other** system. Once you're a registered SoftWood product owner your investment is protected as you'll have access to unlimited free technical support [others charge you] and preferential upgrades to other SoftWood titles, both existing and future. Exciting new products are being developed right now. Pen Pal - your first step on the SoftWood ladder of Amiga software*

Pen Pal is available from all good Amiga software Dealers or from SoftWood. Call for your list of stockists.

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Pen Pal is compatible with any Amiga from A500 to the latest A1200/A4000 ranges with a minimum of 1 Mb. available free memory

The PC1204 4MB Memory Expansion for the Commodore Amiga 1200.



Power Computing's innovative 4MB 32-bit memory expansion for the Amiga 1200 is now available. The PC1204 includes these many features:

Zero Wait State - Unlike some other expansions the PC1204 never leaves the processor waiting around for data, which means that your A1200 can run at its maximum speed.

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Easy To Fit - Fitted in minutes without the need to remove the computer's case.

Optional FPU Disable Switch - Disable the FPU instantly for software that will not run with a maths co-processor installed.

	Power PC1204	A leading competitor
Speed Vs standard A600	4.84 times faster	4.79 times faster
Speed Vs standard A1200	2.19 times faster	2.17 times faster
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PC1204 4MB with clock, 40MHz 68882 FPU **£299.95**
PC1204 4MB with clock, 50MHz 68882 FPU **£339.95**

The XL 1.76MB Drive for the Commodore Amiga.



Power Computing's XL 1.76MB Drive* for any Commodore Amiga is now available. The XL Drive includes these many features:

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High quality design - Uses a high quality Sony high density mechanism.

Comes complete with disable switch and through port.

XL DRIVE

XL Drive £99.95

*Requires Kickstart 2 or above. *Requires Workbench 2.1 or above.

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